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Enhancing the Capacity in the Transport Sector of Namibia

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Walvis Bay
Corridor
Group

Enhancing the Capacity of the Transport Sector in Namibia



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Enhancing the Capacity in the Transport Sector of Namibia

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Degree of Bachelor of Science

Sponsoring Agency: The Walvis Bay Corridor Group

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Abstract

The goal of this project was to provide the Walvis Bay Corridor Group with recommendations to enhance the capacity of Namibia's transport sector. Through archival research and interviews with members of the ocean-based shipping, rail, and trucking industries as well as Namibia customs, we determined the importance of the sector to Namibia's economy and identified its strengths and weaknesses. We recommend increased investment, streamlined document processing and 24-hour port operations as ways to enhance Namibia's transportation and logistics sector.

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List of Acronyms

DRC	Democratic Republic of the Congo
ESA	Eastern and Southern Africa
EU	European Union
GDP	Gross Domestic Product
ICD	Inland Container Depot
NAFTA	North American Free Trade Agreement
Namport	Namibian Port Authority
NDP4	Fourth National Development Plan
NLA	Namibia Logistics Association
NRZ	National Railways of Zimbabwe
NSA	Namibia Statistics Agency
NSS	Namibia Stevedoring Services
SADC	Southern African Development Community
SARA	Southern African Railway Association
SME	Small-Medium Enterprises
TAZARA	Tanzania Zambia Railway
TRL	Tanzania Railways Limited
US or USA	United States of America
WBCG	Walvis Bay Corridor Group

Executive Summary

Namibia is a major transport hub in southern Africa, containing four of the major transport corridors of Eastern and Southern Africa (ESA). It is also home to the Port of Walvis Bay, which is one of Africa's major ports and an entry point for goods being imported into southern Africa. However, the port is too small to meet the needs of the growing transport sector. Namibian businesses are also constrained by shortages of start-up capital, skilled labor, and an outdated railway system. This lack of resources causes delays and bottlenecks that inhibit development of the transport supply chain. Investments need to be put in the transport sector in order to cultivate the national economy because the transport sector has such a widespread financial effect on Namibia.

The goal of this project, sponsored by the Walvis Bay Corridor Group (WBCG), was to assess the transport and logistics sector of Namibia and provide recommendations that would allow for sustainable growth of the sector. For us to accomplish this goal we met the following objectives:

- Determine the contribution to GDP of transit cargo being shipped cross-border through Walvis Bay
- Determine the capacity of the transport sector focusing on ocean-based shipping, trucking, and rail
- Identify major bottlenecks in the sector
- Create a qualitative assessment of the importance of the transport sector using machinery as a specific case study

We performed a data exercise with commodity data provided to us by WBCG to complete our first objective. We determined that in 2010, 2011 and 2012 cargo being shipped through Walvis Bay to cross-border destinations contributed around .37%, .53%, and .46%, respectively, to Namibia's GDP. These numbers seem very small, but the total contribution of the transportation and warehousing sector in Namibia accounted for only about 3% of GDP. This means that most of the contribution from the transport sector comes from regional trade not going through the port, as well as domestic

transport. If more capital were invested in the corridors and the port, the cargo being shipped through Walvis Bay could increase its contribution to GDP and thus increase the overall contribution of the transport sector to GDP. Nevertheless, there has been significant growth already. In 2003 there were zero tons being shipped through the port to and from other countries in the region, but in 2012 there were 682,333 tons shipped through the port as part of transit trade.

Through our interviews with industry stakeholders as well as observations at the port we identified six major causes of bottlenecks within the sector (as well as other minor bottlenecks). The major causes of bottleneck are listed below:

- Customs paperwork
- Slow customs clearance procedures
- Multiple border posts
- Lack of 24-Hour port and customs operations
- Poor rail track infrastructure
- Outdated locomotives

We also created a qualitative diagram that mapped the impact of transport sector on the Namibian Economy by showing how many industries and people are affected by the shipment of one good. We also mapped the process of shipping a transit commodity, machinery, through the Port of Walvis Bay. Both figures demonstrated how important the transport sector is to Namibia's economic and institutional growth.

The Namibian government needs to put a greater focus on the transport sector; this can be illustrated by lack of transport sector Small and Medium-sized Enterprises (SMEs). Many stakeholders believe that the lack of financial support for SMEs is a deterrent to the development and growth of the sector. It is extremely difficult for SMEs to get transporter contracts because there is not an industry standard. SMEs don't know what qualifications they need in order to work with freight forwarders. It is also difficult for SMEs to get loans in this financial climate. As of 2013, an SME Bank has been developed in Namibia to give loans to SMEs, however, it needs to be better advertised to ensure that new SMEs

know where they can find help in financing their businesses. The Ministry of Trade and Industry also needs to mandate that loans actually given out, because the bank is still very wary to give loans to SMEs.

From these findings, we developed a set of nine recommendations for major parties in the transport sector including the Namibian government, Namport, customs and TransNamib. The recommendations pertain to the entire transport sector and supply chain. Five of our main recommendations are:

- Greater investment in the transport sector
- Involve the private sector in Namport and TransNamib operations
- Increase port and customs operations to 24-hours per day
- Streamlined custom regulations (including: single window operations and reorganization of paperwork submissions)
- Governmental policy creation to help SMEs succeed in the main stream economy

For Namibia to see additional economic benefits from the transport and logistics sector, it needs to continue to improve its infrastructure and cross-border operations. WBCG has constantly pushed for state-owned enterprises such as Namport, TransNamib, and the Roads Authority to make improvements to the Port of Walvis Bay, and to the nation's railway and road infrastructure. Improvements need to be made in the sector to increase efficiency, reduce costs, decrease travel time, and improve safety along the corridors.

We hope our recommendations will help WBCG facilitate improvements in the infrastructure and cross-border trade of Namibia. As the transport and logistics sector expands with infrastructural developments and more efficient marketing from the WBCG, there can be a long-term sustainable effect on the country by contributing to achieving Namibia's Vision 2030.

Chapter 1: Introduction

Over the past 20 years the transport and logistics sector of southern Africa has grown significantly. According to the World Bank (2011) regional trade in Eastern and Southern Africa (ESA) has increased at an annual rate of 13.64% since 1999. The presence of the transport is substantial in countries of ESA. A significant number of transport corridors provide trade and mobility between ESA's coastal and landlocked countries. However, there comes a point when the growth of the transport sector becomes inhibited by numerous problems. Namibia, one of the leaders of trade in southern Africa, needs to acknowledge and gain an understanding of the problems preventing growth in the sector. The transport and logistics sector of Namibia must keep up with its growth in order to avoid becoming an impediment to economic development.

After Namibia gained its independence in 1990, the Namibian government created the Vision 2030 initiative, which aims to establish Namibia as a developed country by the year 2030 (Government of Republic of Namibia, 2004). To do this, Namibia must have a more efficient system of trade so that its economy can continue to grow. With the expansion of the Port of Walvis Bay, it is expected that there will be an increase in trade and the use of the three main trade corridors in Namibia (De Klerk, 2012). However, the Namibian government is unsure if the country's existing transport and logistics sector can sustain current and future growth. Our sponsor, the Walvis Bay Corridor Group (WBCG) (2013a), a public-private partnership in Namibia, has noticed that there is a limited capacity in the transport sector and is trying to identify ways to increase its capacity. A systematic analysis of the core transport industries of ocean-based shipping, trucking and rail has not yet been done, but such a study could provide recommendations that would help enhance Namibia's capacity to sustain economic growth and bring it closer to achieving Vision 2030.

Some research has been done in sub-Saharan Africa on the challenges facing the transport and logistics sector. The research shows delays and corruption at customs checkpoints and poor infrastructure impedes the growth of the sector within this region. As a result, 20% of the cost of buying and having goods shipped in Africa goes to the transportations fees and not the actual price of the goods. In developed nations the transportation costs average about 2% of the total price of a good (Beuran, 2012). WBCG has frequently provided Namibian transportation companies advice on efficiency and development through their collaborative efforts with a number of other agencies. Work is already being done on the Trans-Kalahari corridor to transform it into an economic corridor, as an initiative to help add financial growth to the sector. WBCG's influence is also demonstrated by plans for truck stops along the major corridors of Namibia.

The World Bank and other organizations have completed some studies analyzing the three main modes of transportation (ocean-based shipping, truck, and rail) in southern African countries. However, there has been insufficient research completed specifically on Namibia and the Port of Walvis Bay. Before this study was completed, WBCG did not have a tangible overview of the entire transport sector, identifying the inefficiencies and limitations of transporting goods in and out of Namibia. It also did not have adequate information regarding the contribution to Namibia's economy from the goods being shipped through the Port of Walvis Bay to regional destinations.

Our goal was to provide WBCG recommendations that will help sustain the future growth of Namibia's transport and logistics sector. Our objectives included determining the contributions of transit cargo to Namibia's economy, determining the capacity of the sector, identifying bottlenecks in the three modes of transportation, and developing a qualitative diagram of the shipment of machinery as a case study. In order to achieve these objectives, we calculated the percentage the transit cargo through the port contributes to Gross Domestic Product (GDP) using data provided by WBCG. We also worked with WBCG to conduct interviews with managers, executives, and owners of several companies in the three

industries of transportation. In the interviews, we gathered information regarding the sectors capacity and identified where bottlenecks occur in the three transport modes. The results and recommendations will be a part of Namibia National Development Plan (NDP4) and will be used to determine the state of the sector.

Chapter 2: Background

This chapter describes the transport sector with special emphasis on the three core modes of transport: ocean-based shipping, trucking, and rail. We examine successful transport and logistics sectors in countries such as the United States, China, and in the European Union, and also identify the problems encountered within each mode.

2.1 The Transport Sector and Economic Growth

One of the driving forces of economic development is the strength of a country's transport and logistics sector (Mačiulis, Vasiliauskas, & Jakubauskas, 2009). Figure 2.1.1 depicts a theory capturing this relationship: by investing in transport and logistics, a country is able to ship goods at a cheaper and faster rate, resulting in increased productivity for businesses. Companies are able to invest more in business improvements due to reduced transportation costs and improve the quality of their services to generate more business. All of these improvements result in overall economic growth.

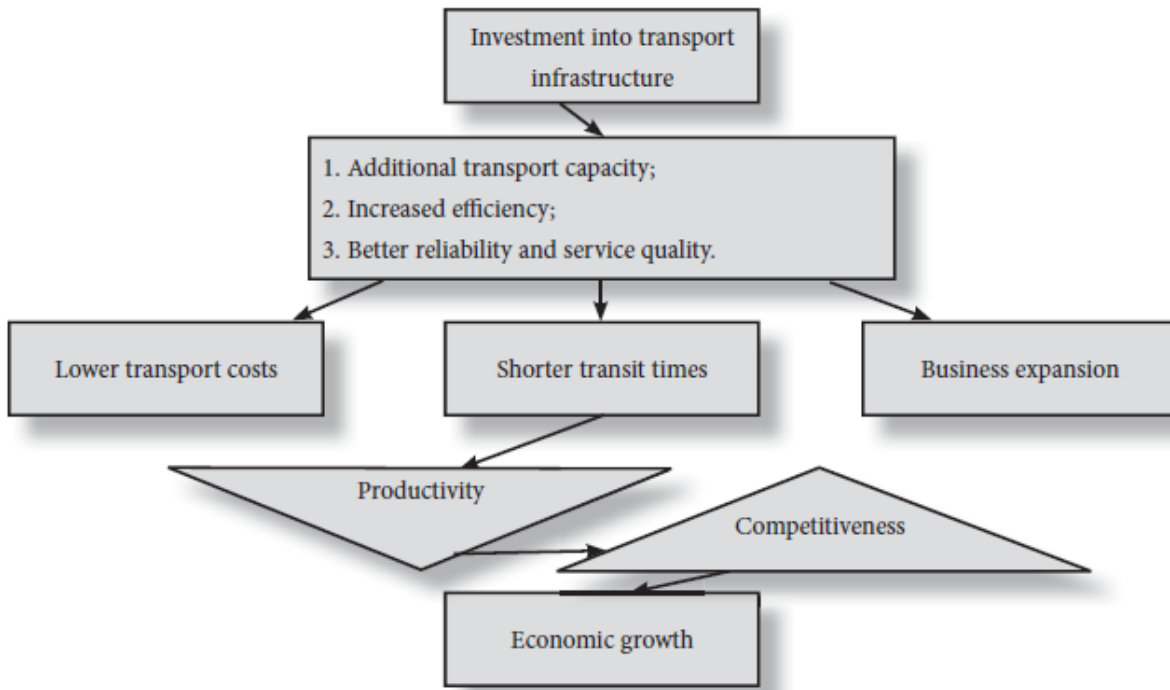


Figure 2.1.1. Investment in Transport Infrastructure (Mačiulis, Vasiliauskas, & Jakubauskas, 2009, p.94)

Lithuania is an excellent example for demonstrating the importance of the transport and logistics sector to economic growth, as measured by GDP. Like Namibia, Lithuania acts as a gateway through which goods travel to other landlocked countries in the region, and belongs to a regional customs/trade union, the European Union. Lithuania also gained its independence in 1990 and therefore has a number of developing industries. In many ways it provides a good model to demonstrate potential of Namibia and the Port of Walvis Bay. As seen in Figure 2.1.2, the transport sector contributed over 10% of Lithuania's GDP in 2007 and still continues to grow (Mačiulis, Vasiliauskas, & Jakubauskas, 2009). The sector made up 5% of the total work force from 1999 to 2007.

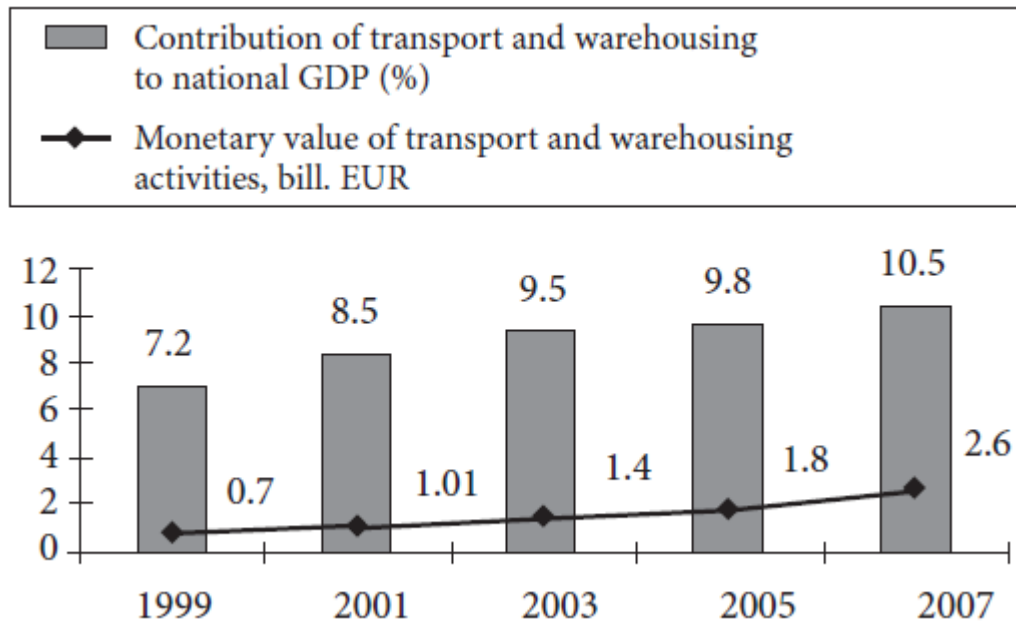


Figure 2.1.2. Economic Contributions of Transport Sector to Lithuania's GDP (Mačiulis, Vasiliauskas, & Jakubauskas, 2009, p.95)

The transport sector is one of the most productive sectors in Lithuania. It is one of the few sectors with a higher exporting than importing rate, as well as a constant positive balance of payments. This shows its competitiveness in the international market. The services provided by this sector include all modes of transportation, the transport of freight and passengers as well as other auxiliary services (e.g. storage and warehousing). This data helps to demonstrate how important the sector is to the overall economy of Lithuania.

To study the relationship between the transport and logistics sector and a country's economic growth, various statistics must be gathered. Such statistics include GDP and the percent contribution that the transport sector adds to this figure. GDP can be calculated in two ways: the sum of all incomes earned by the production of goods and services in a country, or the amount added to the economy during a certain time period. Changes in GDP from year to year indicate economic growth or decay (Mačiulis, Vasiliauskas, & Jakubauskas, 2009). Finding how much the transport and logistics sector contributes to GDP, decisions can be made on how best to improve the sector.

2.2 Ocean-Based Shipping

Shipping has helped great empires like the Greeks and Romans expand their economies and influence. Ocean-trade created a vast industry in its own right, and served as a means to enable the growth of other industries that sprang up around it; in the twenty-first century, this statement still holds true (Shipping Industry, 2008). Trade allows a country to specialize in its most profitable industries and trade for those goods that other countries are comparatively better at producing. As such, Trade with other nations is crucial to the sustained economic growth and prosperity of each country.

2.2.1 International Case Study- The Port of Hong Kong

One of the largest players in international trade, China, boasts import and export figures in the trillions of dollars: US\$1.78 and US\$2.021 trillion (Central Intelligence Agency, 2012a; Central Intelligence Agency, 2012d). China's foreign and domestic markets move traded goods highly efficiently and its business sector is well developed, but it deals with congested ocean port systems just as much of the USA does (Schwab, 2013). The Port of Hong Kong (pictured in Figure 2.2.1) is a port dominated by trade in large cargo containers, freight products, and to a lesser extent, raw materials and passengers. The port is a key factor in the economic development of Hong Kong; the natural bay sheltered by the waters of Victoria Harbor provide ideal conditions for berthing and handling all types of vessels. It is one of the busiest and most efficiently functioning ports in the world.



Figure 2.2.1. Port of Hong Kong (*Fathomshipping, 2013*)

Hong Kong continues to flourish as a hub, serving the South Asian Pacific region and acting as a transfer point between Mainland China and the rest of the world (Hong Kong Special Administrative Region Government, 2012). In 2011, some 410,560 sea-going vessels and river-trade vessels docked in Hong Kong. Hong Kong has a reputation for efficient cargo handling operations. The average turnaround time for container vessels at the container terminals is about 10 hours. For conventional vessels working in mid-stream at buoys and anchorages, it is 27 and 33 hours.

2.2.2 Ocean Trade in Eastern and Southern Africa (ESA)

A study of the Southern African Development Community (SADC), the Common Market for Eastern and Southern Africa (COMESA) and the East African Community (EAC) sponsored by the World Bank, found that “ports [in ESA] are the greatest sources of delay, unreliability, and additional cost on many corridors and sub corridors” (Nathan Associates, 2011, p.16). These ports are inefficient due to

poor location, poor access and poor management of interaction with the other modes of transportation (rail and truck).

Ports are often congested due to urban growth occurring along coastal areas; this is especially the case in the dry and temperate climate along the western coast of Namibia (Nathan Associates, 2011). After ships have been unloaded, the cargo has to be offloaded and transported through thickly settled areas. Without proper planning this traffic can affect the daily functioning of many people living in the area as well as the businesses surrounding the port, slowing trade and economic growth. In many cases the goods are transported to Inland Container Depots (ICDs) in order to store goods and alleviate the traffic surrounding the port. This is seen as a short-term solution to the problem that does not shorten the dwell time of containers, but only the ships holding the goods.

When transferring goods from ships to other modes of transportation a number of other factors can interfere with the success of the process. Whether moving freight to trucks or to railcars, the transfer of goods can require a lot of labor. Although this can be good for a nation such as Namibia, which has a 51.2% unemployment rate, it also requires a lot of coordination and management skills (Central Intelligence Agency, 2012c). Adding a potential lack of management expertise, such as poor communication and adaptability, to this scenario can delay an already time-consuming process.

Having a limited number of berths in a port also affects the port's efficiency - fewer berths means greater congestion of ships around the port. With the recent dredging of the Port of Walvis Bay, there are now 8 berths of two different depths. It also has a limited number of tugs to assist ships in and out of the docking areas (Namport, 2013b; Namport, 2013c; Wessels, 2002).

2.3 Trucking

Over the past 30 to 40 years, the road network has replaced rail as the dominant mode of transportation in Africa (Nathan Associates Inc., 2011). This is because the trucking network is a more

flexible, quicker, and more reliable multi-user transport service than the railways. Trucking has become a more efficient way to move freight on land. One of the major reasons is due to freight forwarding agencies, the supply chain experts for moving cargo. These agencies act as the main contact for clients wishing to import or export goods, arranging the transport of goods from the port to its final destination. Although there are many positive aspects to the trucking industry, there are also numerous problems facing the industry. Some of these issues are the same for the rail systems and at the port, which include the maintenance of infrastructure, the weather, and interactions with customs agents when crossing international borders, actions by unions, and the health of the operators. The severity of these problems varies from country to country, with some countries handling these problems better than others. Developed countries have found ways to solve some of these problems, while for many countries in the ESA these issues are major obstacles, which limit the ability to achieve sustainable development.

2.3.1 Infrastructure

Infrastructure is a major factor in determining the quality of the trucking industry. The most important part of infrastructure is the quality of roads. Developed countries, such as the U.S., have roads that are reliable and usually do not get in the way of transporting goods (Villarreal, 2010). For the most part, these roads are well maintained, and they are large enough so traffic congestion rarely slows down shipments.

However, in many parts of Africa, countries are in the process of rebuilding after political conflict, or are unable to build or maintain their roads due to inadequate resources (Nathan Associates Inc., 2011). Some locations such as Cameroon have dirt roads that cause extreme difficulty for trucks carrying heavy cargo (The road to hell is - unpaved, 2002). During the rainy season the dirt roads turn to mud making it impossible for trucks to move, delaying shipments until the rain has stopped. These roads

are also poorly maintained. After the rains, holes made in the roads by vehicles are filled with rocks in order to repair them; however this solution quickly falls apart, bringing the roads back to their original unmanaged state. There is also the issue of increasing road construction and maintenance costs partly due to the cost of bitumen and diesel fuel needed for the repair trucks (Nathan Associates Inc., 2011). New single carriageway road construction can cost between US\$400,000 and US\$800,000 per kilometer. Many countries in Africa have difficulty affording this, resulting in non-maintenance of their road infrastructure. Some have set up user fees in order to raise money for maintenance. However, this has been unsuccessful in many African countries. Since maintenance is difficult in some of these countries, it could be better for some to rely on rail in order to relieve the pressure for road maintenance.

Unlike many of the countries in Africa, Namibia has a road system that was made for trade throughout its interior (WBCG, 2013c). The road conditions of Namibia's four main transport corridors are of the same quality as roads in developed countries. Since Namibia has one of the most used ports in southern Africa, the Port of Walvis Bay, and the four transport corridors that are promoted by WBCG connect the port to countries all over southern Africa. Two of these corridors, the Trans-Kalahari and the Trans-Caprivi, have separate management committees to help make sure their conditions do not fall into a state of disrepair. However, many of the corridor routes outside of Namibia are made of gravel and dirt, making it easy for truck drivers to get stuck during the rainy season or to be involved in an accident if speeding (U.S. Department of State, 2013).

Many of the goods that come into Namibia are received by the Port of Walvis Bay and delivered to other ESA countries, especially the landlocked ones. The infrastructure of other countries can be an obstacle for Namibian truck drivers. Angola is one of the major countries that receives goods from Namibia and due to many years of war and civil unrest, Angola's road infrastructure has seriously deteriorated (Kahuika, Stork, von Krosigk, & Shilimela, 2003). Landmines left behind from civil war can be found along the side of Angola's roads, making them dangerous for the truck drivers passing through.

Water supply and electricity have been destroyed in some areas, along with any means of communication, leaving the truck drivers stranded with no place to stay and no way for them to get in contact with employers or customers.

2.3.2 Health of Truck Drivers

One of the main issues that Namibian truck drivers face is their state of health. The most prevalent health issue is mental health (Shattell, Sönmez, & Griffin, 2010). Long periods of time away from the trucker's home life and family can cause depression and a lack of productivity. Along with depression, truck drivers are more prone to other stressors such as the pressure of making deliveries on time, protecting the contents of their truck, lack of social contact, and the transient nature of their jobs. All of these stressors eventually add up and may cause the driver to have difficulties with attention, concentration, motivation, decision-making, and reaction-time, increasing the chance of driving accidents, failed delivery, and damage to the truck or injury to the driver.

Due to the pressure to reach their destinations on time, drivers may travel for long periods of time without sleep or take certain drugs in order to stay awake during these periods (Shattell, Sönmez, & Griffin, 2010). In countries such as the U.S., truck stops are set up within a regular distance from each other so the drivers can be within range of one during most of their travel (Early, Jones, Laine, & Rickard, 2009). This setup allows drivers an opportunity to sleep when they feel it is necessary. However, in Namibia, there is a lack of truck stops, forcing the drivers to either keep driving or to sleep in their vehicles, which does not help their physical and mental condition.

In 2001, the Namibian government announced The Road Traffic Transport Regulation Amendment of 2001 (Republic of Namibia, 2001). This amendment contains laws that prohibit lone drivers from driving under certain conditions. These requirements include:

- Driving a maximum of 5 hours continuously and a maximum of 14 hours in a 24 hour period;
- The driver must rest for a minimum of 15 minutes at any time;
- The driver must rest for a minimum of 30 minutes accumulated during a period of 5 hours and 30 minutes;
- The driver must rest a minimum of 9 hours in a 24-hour period (p. 293).

When followed, these regulations help the drivers get the necessary amount of rest and lower their risk of being in an accident. However, due to the lack of truck stops, the drivers may have difficulty finding a place to stop and rest causing them to continue driving for a longer duration. It is also unclear how these rules are enforced as little research has been done on this topic.

Disease is an issue that poses a major challenge for truck drivers and travelers, especially in developing countries. Malaria poses a significant risk for truckers since some routes pass through malarial zones (Early, Jones, Laine, & Rickard, 2009). When a mosquito carrying malaria bites a driver, the disease has an incubation period that varies from 7 to 30 days (Ruebush, 1986). After the incubation period, malaria causes the infected person to suffer from flu-like symptoms such as headaches, fever, fatigue, nausea, and vomiting. Malaria can cause the driver to be accident prone due to a lack of focus. A driver may also be unable to make a delivery due to malaria. This would interrupt deliveries and decrease the number of drivers available to transport shipments, delaying the efficient transport of goods.

Another disease that is hurting the trucking industry is the Human Immunodeficiency Virus (HIV), which results in Acquired Immunodeficiency Syndrome (AIDS). When truckers become lonely, they sometimes seek out commercial sex services, through which they can be exposed to HIV/AIDS (Early, Jones, Laine, & Rickard, 2009). Because this activity has been common in Namibia, truck drivers are looked down on by Namibian citizens and are not welcomed in villages and towns along the routes.

Diseases such as HIV/AIDS and malaria tend to go untreated because of the poor healthcare truck drivers receive (Early, Jones, Laine, & Rickard, 2009). When left untreated, these diseases can eventually cause the driver to be unable to work and can lead to death. As it is often difficult to replace reliable experienced drivers, this reduces the number of truck drivers who are available to make deliveries, thereby reducing the income of the transport industry.

2.3.3 Transporting Across Borders

Bottlenecks are a major concern in the trucking industry, especially at border crossings. Getting a truck and the goods it is carrying through customs can either be a quick process or take weeks depending on the effectiveness of a country's border control operations (Nathan Associates Inc., 2011).

In Europe, the European Union (EU) was formed in 1952 to ease trade among the six original member countries (now 27) (Lafontaine & Malaguzzi Valeri, 2009). The EU is in charge of international transport while each country retains jurisdiction of transport that begins and ends within its borders. Throughout the 1980s and 1990s, the EU began deregulating the major modes of transportation. To speed up the process for truck drivers crossing borders, the EU set up bilateral agreements between member states. This allowed transport permits to be granted to drivers allowing them to travel across the border for a limited period of time or for a certain number of journeys. Some vehicles are allowed to obtain a permit that allows for unlimited trips through the border during a certain time period. This is one of the many gradual steps the EU has taken to deregulate the international road freight transport sector. Eliminating quotas on the number of vehicles that can travel through the border and reducing border control have had a positive effect on the amount of international road transport in the EU. Once these quotas were relaxed, international freight transport significantly increased because it became cheaper, less time consuming, and more efficient.

Unfortunately, in Africa, getting across an international border is more difficult. Some processes such as getting a visa to cross over into Chad can take up to ten weeks to process (Kimenyi & Smith, 2012). Due to numerous reasons including political conflict, time, and money, Sub-Saharan African governments are unable to improve their customs processes for travelers. Preparing the documents for transporting goods across a border can take about 16 days for Namibian borders and 25 days for Angolan borders (Nathan Associates Inc., 2011). Reasons for this include poor coordination among agencies processing the paperwork and corruption among border post officials who delay clearance for monetary bribes. Reforming border management and protocols are costly, take a long time to accomplish, and many governments do not want to give up their control on the borders.

The conditions at many Namibian customs checkpoints are poor. Some checkpoints have a limited number of buildings, and truckers are forced to do their paperwork outside (Teravaninthorn & Raballand, 2009). These checkpoints also lack areas for the truckers to rest while they wait for their paperwork to be processed. This makes crossing the borders even more miserable for the truck drivers since there is no shelter from bad weather conditions. Many of these main border posts also have limited parking for trucks.

Namibia has made efforts to ease the process of crossing borders for truck drivers. The country has joined SADC in the hopes of creating a situation similar to the EU or NAFTA. In 2010, the Namibian government signed a deal with the Democratic Republic of Congo (DRC) and with Zambia to try to harmonize all aspects of transport and trade as part of developing the Walvis Bay-Ndola-Lubumbashi Corridor (BBC, 2010). The deal was done in the hope of eliminating bottlenecks at international borders in the region and to attempt to reduce the cost of transporting goods. This would allow the countries of the DRC and Zambia unimpeded access to Namibia's Port of Walvis Bay, which would allow for quicker access for trucks. It also would allow easier access for Namibian truckers to the DRC and Zambia.

Corruption can also be a large problem in less developed countries, like Namibia. Border officials sometimes demand bribes from truck drivers, often called speed money, in order for the drivers to get approval for the necessary paperwork to cross the border (de Jong & Bogmans, 2011; Troy, 2013). If the drivers are unable to pay, they could be stuck for weeks at the border, waiting for the paperwork to go through. A study showed corruption reduced the number of imports that entered a country, but had little effect on exports. It was also found that frequent payments to customs officials enhanced imports. It is unclear whether the truck drivers pay from their own pockets or whether the trucking company pays these bribes. If the trucking company pays, it takes a financial hit for each delivery that must cross a border. This means that the company is unable to invest as much money into making improvements to the trucking company's infrastructure.

Corruption is a problem that occurs in the Namibian government and at customs checkpoints at the borders (Horn & Skeffers, 2010). The government has made multiple attempts to reduce corruption with amendments such as the Anti-Corruption Act in 2003. However, some claim that the Act does not delve deep enough to prevent corruption. The Act does not allow for the checking of government employees' accounts. It also fails to create a committee for looking into corruption. Although the Act does not include key anti-corruption techniques, it is a step in the right direction for fighting corruption within Namibia.

2.3.4 Security

Driving conditions vary depending on location. In developed countries, such as the U.S., drivers usually do not have to worry about their goods being stolen because of the large amount of security funded by the government. U.S. law also requires that truck stops be within a certain distance of each other so that drivers can get food and rest whenever necessary (Early, Jones, Laine, & Rickard, 2009).

Truck stops also provide secure parking for the vehicles and allow drivers to be away from the trucks without the worry of theft.

In 2009, Namibian trucking companies were interviewed about theft (Early, Jones, Laine, & Rickard, 2009). The study concluded that security was the most significant issue along the corridors. The problems that frequently occurred included siphoning of diesel from trucks and theft of various parts of the truck. Trucking companies reported many financial losses due to theft of their vehicles and goods. One small company with ten trucks reported a loss of N\$80,000 per year. This shows that security is a major problem in Namibia, and when these crimes occur, they result in economic and material loss for trucking companies. These crimes also result in the failure of goods reaching their destination, a major problem facing Namibia's growing economy. In order to improve security, it was suggested that truck stops be added to include fenced parking guarded by professionals. However, some security contractors are only available in major towns, thus security outside of these towns would be limited.

2.4 Railways



Figure 2.4.1. A freight train traveling in the American North West Corridor (*High-speed Railroading, 2010*)

The freight railway in the United States, as depicted in Figure 2.4.1, has grown into one of the best freight railways in the world as stated by the Association of American Railroads (2012). There exist federal and state grants to help freight railroads upgrade their lines to increase speed and efficiency.

The rail system has been growing and becoming more efficient. Over the past ten years there has been even more growth as interstate highways have become clogged, forcing the need for freight trains as noted by the Association of American Railroads (2012). Railways can help to limit the rise in road congestion. Trucking companies such as J.B. Hunt have come to see the advantage of putting trailers on flat wagons for long hauls and using roads only for local pickup and delivery.

Since 1981 productivity of the railway has risen by 172%. Adjusted for inflation, rates for shipping goods are down by 55%. A graph from the Association of American Railroads (2012) shows this exponential rise (Figure 2.4.2).



Figure 2.4.2. US Railway Productivity vs. Revenue (*Association of American Railroads, 2013*)

The United States freight rail system is among the cheapest in the world, costing less than half as much as the system in Europe. This can be seen in the Association of American Railroads graph in Figure 2.4.3.

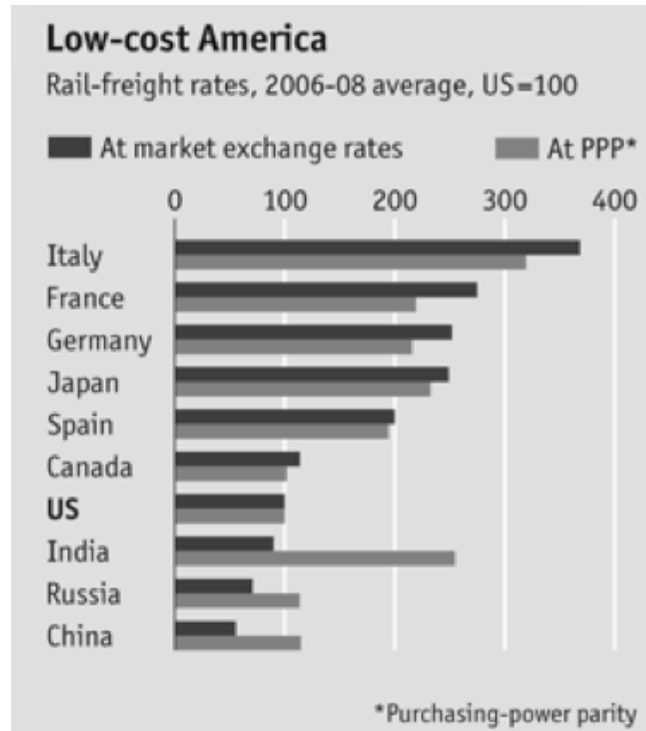


Figure 2.4.3. The Cost of Rail-Freight of Several Countries (*Association of American Railroads, 2013*)

The rail system of the United States is extremely successful because it has financial backing from the government and private enterprises to keep it up-to-date (Association of American Railroads, 2013). The United States railway system demonstrates how successful freight transport can be on a rail system, if efficient and funded properly. We will now explain why the railways in southern Africa cannot compete with the railway systems in countries like the United States.

2.4.1 Railways in the ESA

Many of ESA's regional railway systems are not functioning well—they are not reliable, are prone to accidents and failure, have high costs, and move low volumes of freight (Nathan Associates

Inc., 2011). They are financial loss makers and are not operationally sustainable. The reasons for this have been debated and studied for years. The consensus from the World Bank and United Nations is that the railways are failing due to the initial loss of volume and income after deregulation of road transport, followed by lack of investment and deferred maintenance, leading to declining reliability and further loss of traffic.

In general, privatization of the railways through long-term concessions has not been successful (Nathan Associates Inc., 2011). In many cases the privatization process was flawed, taking much too long and with no provisions for funding during the process. Government support has not been steady either, partly because of an inability to fund new investment and partly because of political interference leading to poor management. This has been seen throughout the ESA countries.

The World Bank (2011) has stated that several regional railway systems now have too little traffic and income to sustain operations. Budget and performance indicators show that income is first spent on salaries and fuel, with little left for maintenance and repair of infrastructure and equipment. The railways thus continue to decline and lose customers and are unable to attract the money needed to return them to competitive levels of reliability. Tanzania Railways Limited (TRL), Tanzania Zambia Railway (TAZARA), and National Railways of Zimbabwe (NRZ) estimate that they each would require about US\$200 million to revive rail operations, excluding provisions for working capital. The incomes of these railways need to increase for them to achieve financial viability. However, the traffic and income cannot increase because they lack operator credibility. There is no money being allocated from national governments, the World Bank, or the private sector. These parties will only invest in the rail system when there are tangible guarantees that trade volumes will bring in money. The relationship is shown in Figure 2.4.4.



Figure 2.4.4. The vicious cycle that prevents the railways from improving operations

2.4.2 Railways in Namibia

The railway system in Namibia is comparable to those in other southern African countries. It is slowly decaying, and inefficiently transports goods because of its narrow gauge tracks. The railway is unable to carry most freight from the ports because the cargo in containers is designed to travel on broad gauge rail cars not narrow gauge cars.

Building new lines and linkages will likely exacerbate the situation if funding is not acquired to maintain them. Prior to deregulation in the 1980s, railways were partly protected with respect of volumes and tariffs charged (Nathan Associates, 2011). This is no longer the case, unless there is market interference from the Namibian Government. However, there is not enough bulk traffic to sustain railways.

The decline of the regional railway systems and the increasing difficulty of financing the escalating cost of rail-track maintenance are most likely the main reasons for the current focus on a

multitude of new regional railway mega projects (Nathan Associates, 2011). But new links will not be bankable before the existing systems are turned around. To be most beneficial and effective in the long run the rails will have to be rebuilt as broad gauge - however due to Namibia's membership in the Southern African Railway Association (SARA) this is not allowed. Even without this restriction, there is not enough capital in Namibia's public sector to fund an entire renovation of the Namibian railway system. However with legislation to allow the private sector's involvement in the development of new infrastructure on its way, feasibility studies have been conducted for new sections of rail and the funding may truly be available.

2.4.3 Railway Cost Upgrades

For the Namibian rail system to be a viable mode of transporting goods it needs to be upgraded (Nathan Associates, 2011). Here we list the required upgrades and the estimated costs in US dollars based on a study done by the World Bank in other ESA countries.

- Complete upgrade of new sleepers and rails to 20t axle load, US\$400,000 to US\$500,000/km;
- Broad gauge railway— a cost of about US\$ 1.2 million per km for a 800km broad gauge railway to carry about 10 Metric Ton per anum (mtpa).

As the railway carries such low volumes of freight, no regional railway systems generate enough income to pay for track and equipment maintenance. Additional funding from the government will be necessary to accomplish these upgrades. However, the government does not have the funds required or the manpower to fix the railways.

Fixing the decaying railway system in Namibia is not currently feasible. Thus, we will focus mainly on the trucking industry and the ocean-based shipping industry at the port when making recommendations on how to improve Namibia's transport industry.

2.5 Summary

Enhancing the capacity of Namibia's transport sector will pose numerous challenges due to the many issues truckers and shippers will have to overcome. In this chapter, we have discussed the core transport industries of ocean-based shipping, trucking, and rail and explored the problems and challenges facing each. We also discussed the economic value of the transport sector. In the next chapter we will discuss the methods we used to determine how to enhance the capacity of Namibia's transport sector.

Chapter 3: Methodology

The goal of our project was to provide WBCG with an assessment that will help enhance the capacity of Namibia's transport and logistics sector, specifically the core modes of transportation ocean-based shipping, trucking, and rail. To reach this goal our objectives were to determine the contributions of the transport and logistics sector to the Namibian economy, determine the capacity of the three transport industries, identify the major bottlenecks, and present a qualitative diagram of the shipping process using a case study of machinery. In this chapter, we describe the methods we used to achieve our objectives.

3.1 Determining the Contributions of the Transport Sector to the Namibian Economy

To determine the contribution of the transport sector to GDP we had to look very closely at freight forwarding companies in Namibia. From Johny Smith, the CEO of WBCG, we obtained statistical information about the freight tonnage that had passed through the Port of Walvis Bay between 2009 and 2013. The spreadsheets contained the tonnage shipped in twenty and forty foot containers and break-bulk cargo that was exported and imported each month through the port. The spreadsheet contained data from the last quarter of 2009 to the first quarter of 2013. We used this data to give a quantitative picture of the importance of the transport sector to Namibia's economy. We reorganized the data so we could see the total tonnage of each individual commodity per year. For each year we calculated the amount of tonnage of each commodity exported and imported through Walvis Bay to and from Namibia's ten major trading partners: Angola, Botswana, Democratic Republic of Congo (DRC), Congo, Malawi, Mozambique, South Africa, Kenya, Zambia, and Zimbabwe. We were able to quantify the major commodities that pass through Namibia and see which transport corridors carried the most

trade volume. However, the data excluded domestic cargo: cargo with Namibia as its point of origin and final destination, regional cargo: cargo that does not pass through the port, and imports and exports: cargo that passes through the port to and from Namibia.

To calculate the contribution of the transport sector to Namibia's GDP, we needed to convert the tonnages into monetary values. Johnny Smith provided us with prices for shipping twenty foot and forty foot dry and reefer containers from the port to the destinations of Lubumbashi (DRC), Lusaka (Zambia) and Harare (Zimbabwe), but we were unable to obtain pricing for any of the other countries. To predict the other prices, we took the prices given to us and stripped them of all costs and fees except for the transport cost. We then graphed the three transport costs based on Namibian dollars per kilometer and developed a best-fit line for these three data points. Using the best fit line, we were able to predict the transport costs for transporting goods from Walvis Bay to the following destinations: Lubango (Angola), Gaborone, (Botswana), Brazzaville (Congo), Nairobi (Kenya), Lilongwe (Malawi), Maputo (Mozambique), and Johannesburg (South Africa). We used these destinations because they were the capitals of the countries in the commodity data spreadsheets and they can be accessed using the Namibian corridors. Once we calculated all of the transport costs based on the distance traveled, we then added back the costs and fees that we had removed earlier. These included port charges, road bond fees, and customs documentation fees. Since all of the costs and fees were the same for the original three destinations, we assumed they would be the same for all of the other destinations. We also assumed that it would be the same price to ship exports and imports through Walvis Bay to and from the other southern African countries. Finally, we assumed that only Namibian freight forwarders were used, and that the prices charged by the different freight forwarders were all the same for transporting the commodities.

Once we obtained the prices for transporting commodities between Walvis Bay and other southern African countries, we calculated how much it would cost to transport all of the commodities to

their final destinations. This produced revenue figures earned by freight forwarders for 2010, 2011 and 2012 (since these three were the only full years of data.) We then divided these revenue figures by Namibia's GDP for each of those years, giving us the percentage of GDP produced by freight forwarders for transporting goods through Walvis Bay to other southern African countries. We compared these figures with the "Transportation and Warehousing" percentage of GDP that had been calculated by the Namibia Statistics Agency (NSA) to see if most of the transportation was domestic, regional, imports and exports, or transit shipments through Namibia's Port of Walvis Bay.

To understand the importance of the transport sector to the Namibian economy we interviewed Wilbard Nashandi, the Deputy Director of the Projects and Incentives Division from the Namibia Investment Centre (NIC). NIC was formed in 1990 under the Foreign Investment Act No. 27 of 1990. NIC is a subsection of the Ministry of Trade and Industry that promotes projects to potential investors. The projects relate to energy, infrastructure, tourism, and manufacturing. We asked questions dealing with the marketing of infrastructure projects as well as the investments in these projects. The interview protocol can be found Appendix B.

3.2 Determining the Capacity of the Transport and Logistics Sector

To determine the capacity of the transport and logistics sector, we interviewed various members, mainly executives, involved in the three core modes of transport: ocean-based shipping, trucking, and rail. To accomplish this, we determined where there was room for an increase in capacity within each mode as well as where the industry was working at full capacity. For example, we visited the Port of Walvis Bay to determine if it had enough berths for vessels carrying containerized goods and had sufficient stevedores and equipment to sustain the work needed for an increased number of shipments passing through the port.

To protect the individuals that we interviewed, our team developed oral consent scripts specific to the individuals interviewed to inform them of their roles in our research (found in appendices B - E). In most cases, executives gave us permission to use their names in our report.

3.2.1 Ocean-Based Shipping

To determine the capacity of Namibia's ocean-based shipping industry, we first interviewed Phillemon Mupupa, Key Accounts Executive of the Namibia Port Authority (Namport). Since Namport is the only company managing the Port of Walvis Bay, we obtained useful information regarding the capacity of the port from Mr. Mupupa. The interview was made possible with the help of our project liaison at WBCG, Gilbert Boois. From the interview, we were able to gather information about the structure of the company as well as the port, the process for unloading a ship, the type of technologies used to run the port, reasons for congestion at the port, and the number of berths at the port.

We were given a tour of the Port of Walvis Bay by Mr. Mupupa. During the tour, we were able to observe port employees, the stevedores, and the equipment firsthand to see if there were any obvious inefficiencies or limitations surrounding port operations. We were able to use the information we obtained from the interview during the tour to assess if the port had the capacity for future growth and increased trade volumes. The interview protocol used for Mr. Mupupa can be viewed in Appendix C.

In addition to interviewing an executive of Namport, we interviewed Pieter Louw the Business Development Manager of the Namibian Stevedoring Services (NSS), one of the three stevedoring companies used at the port. The stevedores are dockworkers who load and unload the ships' cargo and move the containers within the port. Mr. Louw was able to inform us about the requirements and training for becoming a stevedore and his views on whether there was enough capacity at the port for continued growth. The interview protocol for Mr. Louw can be found in Appendix C.

We also interviewed managers of three freight forwarding companies. Since these companies are involved in operations at the port every day, they were able to provide us with their views on the operations of the port and if they believed that the port had the capacity for future growth. Other topics discussed included the process for having a shipment delivered to the port, the procedure for going through customs, and the process for loading cargo onto trucks. The interview protocol for freight forwarding companies can be found in B.

3.2.2 Trucking Industry

To determine the capacity of the trucking industry, we interviewed the managers and owners of a small and a large trucking company in Namibia. In these interviews we gathered information on how well these companies have been managing their deliveries and if they felt they were prepared for an increase in the number of deliveries. Information was also collected on the transitions of cargo between modes (boat to truck or rail to truck) in a typical delivery. The companies also discussed whether they needed more trucks and drivers to make deliveries, if they could afford to hire and train new drivers and buy new trucks, if there were having trouble finding new drivers, and the requirements and training for new drivers. Another topic discussed was the differences between small and large trucking companies and how to expand a small company's business. The information allowed us to determine whether the companies were functioning at full capacity and if they had the ability to increase their capacity. The interview protocol for trucking companies can be read in Appendix D.

We interviewed the managers of three freight forwarding companies in Namibia. The interview protocol for freight forwarding companies can be viewed in Appendix B. Freight forwarders are in constant contact with transporting companies, making them ideal candidates to provide us with information on the capacity of the trucking industry. These individuals were able to give us opinions on how well the trucking companies were performing and provide us with complaints they receive from

transporters about the shipping process. Other topics discussed included how trucking compared to the other modes of transportation, if they have ever had problems with lost cargo or not making deadlines, and their requirements for working with large and small trucking companies. With this information we were able to see how well the trucking industry was performing as part of the overall shipping process.

3.2.3 Rail Industry

We determined the capacity of the railway system in Namibia. To determine the railway's capacity we interviewed a Hippy Tjivikua, Senior Operations Manager at TransNamib, which is the only rail service provider in Namibia and specializes in the transportation of freight (TransNamib, 2013). Thus the information we obtained about the condition of the rail system was primarily from TransNamib. We gathered information on how quickly cargo is transported by rail, how much cargo the trains carry, the types of cargo they transported and if they had enough resources for current and future deliveries. In section 2.4.2, we explained that containerized freight cargo is better transported on broad gauge rails. However, the Namibian railway is made up only of narrow gauge rails, which has been mainly used for transporting mined ore, not for transporting typical freight containers. We gathered information on how TransNamib plans to address this issue, how this will affect the future transport of trade goods, and if the company has the resources to make the necessary improvements to the railway. Another topic discussed was the requirements and training process for hiring train drivers and if there were enough train drivers. The interview protocol for Mr. Tjivikua's interview can be seen in Appendix E.

We also talked to three freight forwarding companies to obtain their views on the rail system. In the interviews, we discussed how often they used the rail to ship goods, the advantages and disadvantages of using rail, and how rail compares to truck transport. The interview protocol for the freight forwarding companies can be viewed in Appendix B.

3.3 Identifying Where Bottlenecks Occur

Our third objective was to determine where the major bottlenecks occur in the three core modes of the transport sector. Along with focusing on the three modes of transport themselves, we also took into account the delays at customs checkpoints, which occur for each mode. Finally, we looked at the bottlenecks that occur while transitioning cargo from one mode to another.

3.3.1 Ocean-Based Shipping Industry

To determine the bottlenecks in the ocean-based shipping industry we conducted interviews with Phillemon Mupupa of Namport, Pieter Louw of NSS, and three freight forwarding company managers. The interview protocol for these individuals is mentioned in section 3.2.1. Since Namport is the company managing the Port of Walvis Bay, Mr. Mupupa was able to identify the major bottlenecks at the port. Since the stevedores are responsible for the unloading of containers, Mr. Louw was able to identify bottlenecks in the unloading process. The freight forwarders were also able to provide us with information on bottlenecks at the port since they know the process cargo must go through at the port before it is loaded onto trucks. As part of the interviews described in section 3.2.1, we discussed where the major bottlenecks occur, the reasons behind them, and their opinions on what could help alleviate the bottlenecks. This information helped us determine the major bottlenecks and gave us a starting point for finding a way to eliminate them.

3.3.2 Trucking Industry

To identify the major bottlenecks in the trucking industry we conducted interviews with an employee of the Namibian Roads Authority, the managers of two trucking companies and three freight forwarding company executives. The interview protocol for these individuals is mentioned in section 3.2.2. The trucking company managers were interviewed because of their firsthand experience with

making deliveries by road and their encounters with the delays in the process. The freight forwarders were also able to provide valuable information since they are constantly in contact with transporting companies and are also trying to identify bottlenecks to see where the delays occur. As part of the interviews mentioned in 3.2.2, we asked where the major bottlenecks occurred during the shipment of goods by road and what the causes were. Each interviewee provided a different perspective on the problems. We also asked what they believed would help alleviate the bottlenecks that they faced.

3.3.3 Rail Industry

To determine the main bottlenecks in the rail sector we interviewed Hippy Tjivikua of TransNamib, as part of the interview mentioned in section 3.2.3. Mr. Tjivikua was interviewed because TransNamib is the only rail company in Namibia, and he knows where the bottlenecks are as part of his job as Senior Operations Manager. We also inquired about the rail system in every interview we conducted in order to understand public opinion about the railway and the rail's influence on the transport sector. In these interviews, we asked where the major bottlenecks occur and main causes are. We also asked for opinions on what could be done to alleviate the bottlenecks and if there were any plans to address the inefficiencies.

3.3.4 Customs and International Trade

Each of the three sectors has to work with customs at border crossings and at the port. As described in section 2.3.3, delays at customs checkpoints can present some of the most easily recognizable signs of bottlenecks due to corruption and inefficiency. We interviewed a Namibian Senior Customs Officer at the Trans-Kalahari border post on the Botswana border. We did not interview custom officers at the Port of Walvis Bay because the procedures are the same at all posts. In the interview, we asked if there are ever any signs of congestion at the post along with any causes behind slowdowns. We also asked about the causes of bottlenecks and asked for his suggestions for alleviating the bottlenecks.

The interview protocol for the Senior Customs Officer is in Appendix E. From this interview we obtained information about customs bottlenecks that may occur along the Trans-Caprivi Corridor as well.

3.4 Creating a Qualitative Diagram of Transporting Machinery

To accomplish this objective, we had to discover the process for transporting machinery from Walvis Bay to its final destination. Johny Smith, CEO of WBCG, chose machinery as the representative commodity to track because the procedure for shipping machinery is similar to the shipment of many other commodities. We interviewed representatives from the three freight forwarding companies, two trucking companies, Namport and Namibia Stevedoring Services. As part of the interviews described in sections 3.2 and 3.3, we discussed how often they moved machinery and asked about the process for transporting it. We also gathered information on the people and the companies involved in the shipment of machinery. With this information, we made a flow diagram of the steps for shipping the machinery through Walvis Bay out of Namibia. We then made a diagram of all of the people, companies and organizations involved in the process to show that many are affected economically by the transportation of machinery. We did this to highlight, in a qualitative manner, the importance of investing in the transport sector.

3.5 Summary

We interviewed managers of freight forwarding companies, an employee of Namport and NSS, a customs official, trucking company managers and owner, NIC members, and a TransNamib manager. We also spent time directly observing port and custom operations, as well as using statistical data to calculate the transport sector's contribution to the Namibian economy. In the next chapter we will provide the results of our research.

Chapter 4: Results and Analysis

In this chapter, we present our research results that helped us achieve our four main objectives: determining the contribution of the transport sector to the Namibian economy, determining the capacity of the transport sector, identifying bottlenecks and creating a qualitative diagram of the specific commodity, machinery, and its transportation process.

4.1 Contribution of Transport Sector to the Namibian Economy

Using the commodity data we determined the amount of imports and exports into and out of the southern African region through the Port of Walvis Bay. The data shows that freight tonnage passing through Walvis Bay into southern Africa increased from 413,356 to 462,599 freight tons between 2010 and 2011. However, in 2012 a total of 646,365 freight tons were transported. This could be the result of an increased popularity of the Port of Walvis Bay. However, it could also be attributed to the global recovery from the financial crisis that began in 2008.

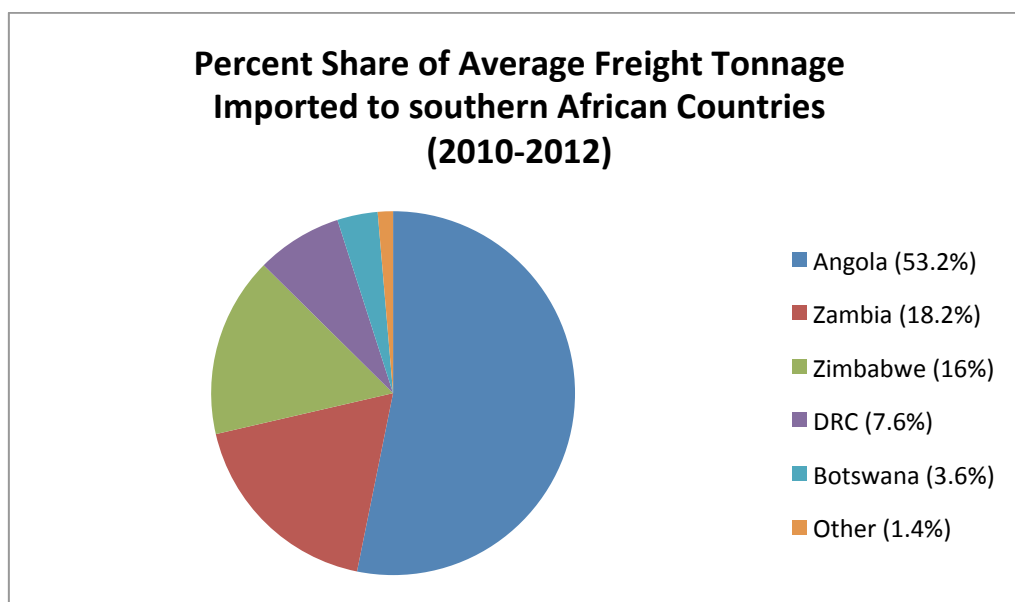


Figure 4.1.1. Percent Share of Average Freight Tons shipped to southern African countries through the Port of Walvis Bay

As seen in Figure 4.1.1 most of the commodities imported through the Port of Walvis Bay go to Angola, Zambia and Zimbabwe with averages of 53.2%, 18.2% and 16% over the three-year period from 2010 to 2012. The graph can be misleading because the weight of imported vehicles is much greater than the weight of other goods. For Zimbabwe, about 92.5% of the freight tons are vehicles and for Angola, vehicles make up around 38% of the freight tons. Figure 4.1.2 shows the percentage of the total number of containers passing through the port that go to other southern African countries. The percentages for the different countries have been very stable during the years 2010 -2012.

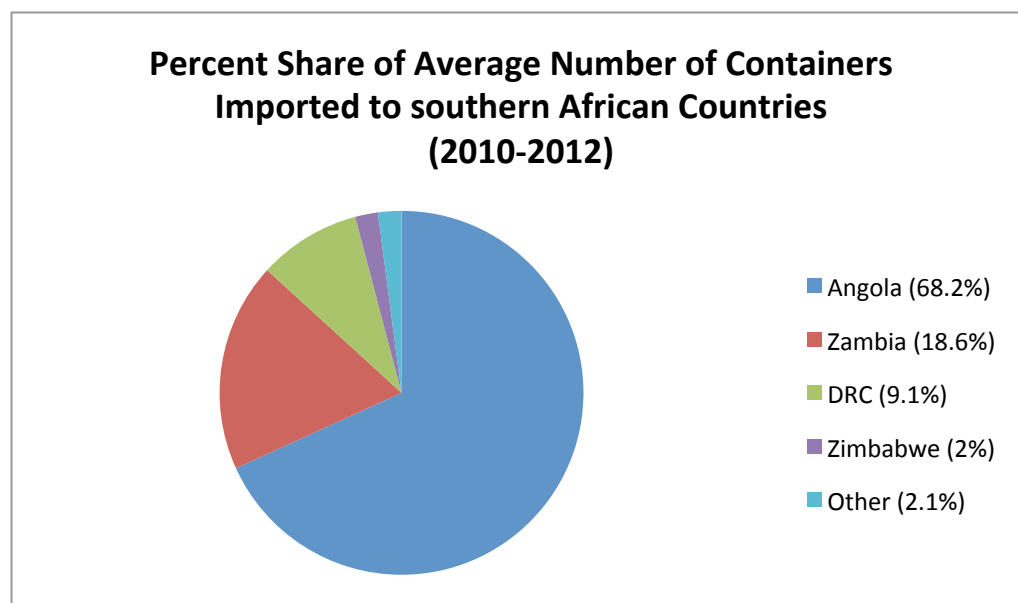


Figure 4.1.2 Percent share of total number of containers shipped to the leading southern African trading countries through the Port of Walvis Bay

From 2009 to 2012, fewer goods were exported from the southern African region than imported into it. The freight tonnage exported through the Port of Walvis Bay followed a similar growth pattern for imports with a slight increase from 2010 to 2011, from 43,176 to 43,428 freight tons. There was also a large increase to 60,523 freight tons exported in 2012. Most of these goods came from Zambia and South Africa, with Zambia providing about 87.9% of the goods exported and South Africa, about 7%. Of the goods exported from Zambia, 95.4% of the freight tons in 2012 were processed copper. Figures

4.1.3 and 4.1.4 show the percentage shares of freight tonnage and total containers exported from southern African countries through the Port of Walvis Bay, respectively.

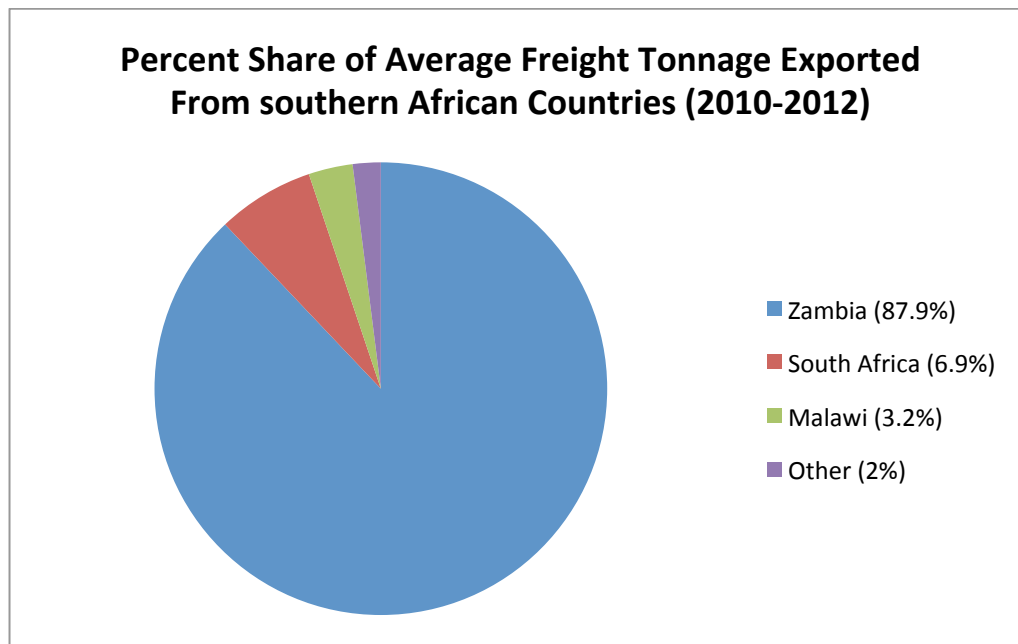


Figure 4.1.3. Percent share of average freight tons shipped from leading trading southern African countries through the Port of Walvis Bay

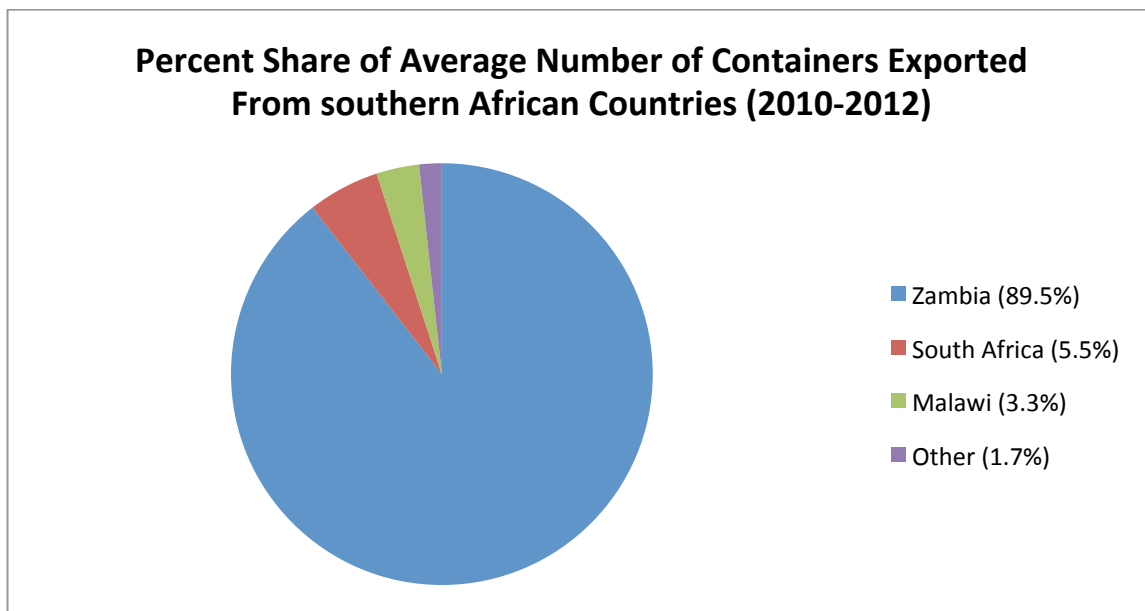


Figure 4.1.4 Percent Share of total number of containers shipped from the leading southern African trading countries through the Port of Walvis Bay

In 2012, the freight tonnage imported into the region was about 10.7 times greater than that which was exported. This is not surprising as we were expecting countries in the southern African region to be importing much more than they were exporting due to the low amounts of manufactured goods that are then exported out of the region.

Using the method described in Section 3.1, we calculated the revenue produced by freight forwarders for transporting goods to and from the Port of Walvis Bay through Namibia. We found that revenue for 2010, 2011 and 2012 was N\$ 302M, N\$ 477M and N\$ 479M. The NSA provided us with the percentage of GDP that comes from transport and warehousing, which has been around 3% each year for the past four years (2009-2012). Using the revenue and GDP figures, we determined that the percentage of GDP from transit cargo through the port was about 0.37% in 2010, 0.53% in 2011, and 0.46% in 2012, as given in Table 4.1.1.

Current prices - N\$ millions	2010	2011	2012
Revenue from transit cargo	302.37	477.17	479.41
Namibia's GDP	80775	90603	105146
Percentage of GDP from transit cargo	0.37%	0.53%	0.46%

Table 4.1.1 Revenue and GDP Percent Share from 2010 to 2012

The numbers show that the contribution to GDP from transit cargo through Walvis Bay is significantly smaller than the amount transport and warehousing contribute as a whole to GDP. The large gap indicates that a greater portion of Namibia's revenue from transport and warehousing is in domestic and regional transportation and logistics as well as imports and exports. Figure 4.1.5 shows the total tonnage of goods shipped through all Namibian border posts, these statistics were provided to us by WBCG. The "transit" category represents the goods shipped through the port, bound for or originating from other countries. As one can see the percentage of "transit" goods accurately portrays the data we collected, a small percentage of all transported goods.

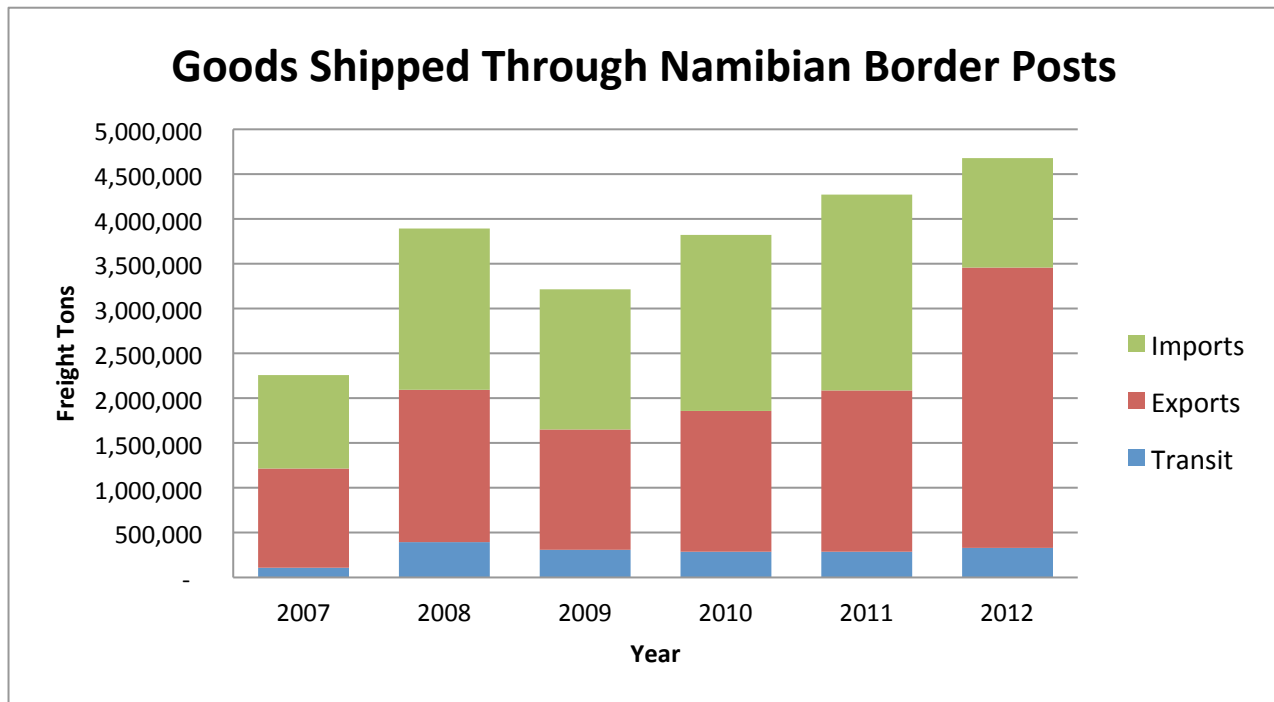


Figure 4.1.5. Portrays the total tonnages of goods shipped through all Namibian border posts. The data is broken down by imports, exports, and transit tonnages

Even with transit tonnage contributing a minor amount to the overall GDP, it is critical to recognize how much it has grown over the past nine years, as shown in Figure 4.1.6. In 2003 there were zero tons of transit cargo being shipped through the port, but in 2012 there were 682,333 tons of transit cargo shipped through the port. This is a significant contribution to the development of Namibia's transport sector.

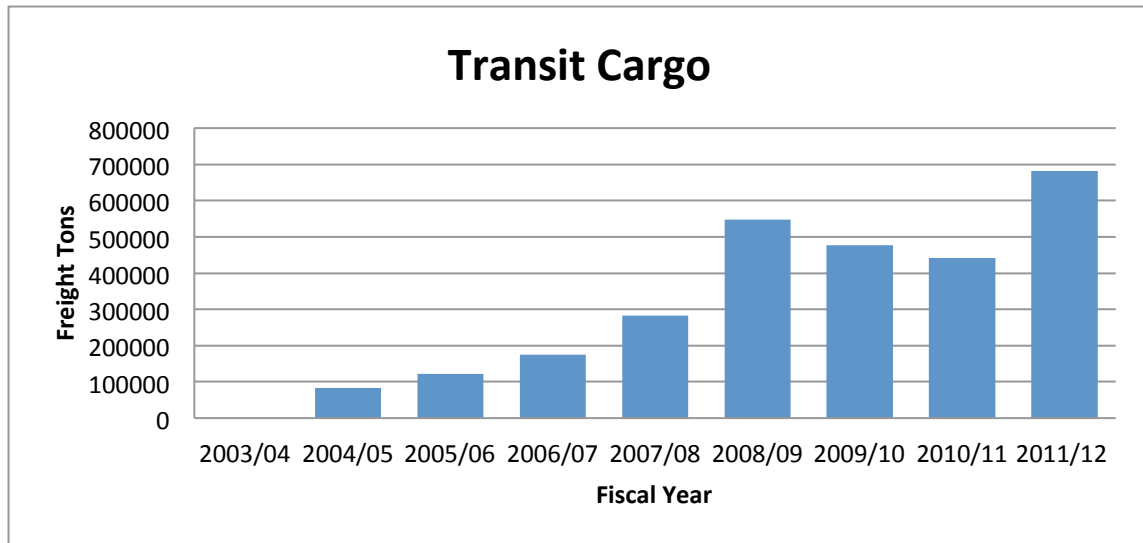


Figure 4.1.6. Tonnages being shipped through the Port of Walvis Bay over a nine-year span

From our interviews with various stakeholders in the sector, we have learned that the transport and logistics sector has the potential to increase its capacity, if given the opportunity. The Ministry of Trade and Industry has begun a new initiative, “Growth at Home”. The Ministry wants to focus on projects that are catalysts: projects that spiral outward and are far reaching within Namibia. These projects should be beneficial in that they create many jobs and contribute positively to GDP. There are projects like these throughout the transport sector, such as road infrastructure projects, the port expansion, rail upgrades, and the creation of truck stops. It is important that investors are aware of the benefits of investing in Namibia. Figure 4.1.7 shows an advertising piece that NIC uses to promote Namibia to investors.

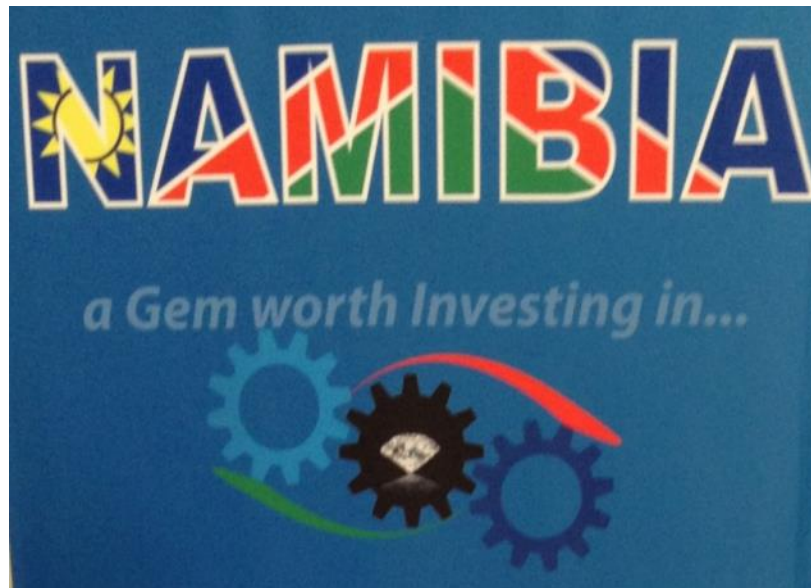


Figure 4.1.7. An advertisement for Namibia as a country that should be invested in

The NIC is given a lump sum of \$N150 million to market projects. However, the money used for marketing is split evenly to advertise all projects. There are also no specialized promoters for the transport sector; employees of NIC are spread too thinly to provide adequate advertising of projects, especially for the transport sector, where large investors are needed.

4.2 Capacity of the Transport and Logistics Sector

By analyzing the information gathered through our research we developed the following observations of corridor development, the challenges that transport and logistics companies face, and the developmental projects and strategies that have helped transport companies succeed. It must be noted that that these viewpoints do not provide a complete or well-rounded picture of the sector because we were only able to conduct a small number of interviews.

4.2.1 Corruption within the Sector

There are many instances in the transport sector where corruption can occur. The majority of the corruption is encountered in the trucking industry. These encounters normally occur at customs

checkpoints and more recently with traffic control. At customs, truck drivers are sometimes expected to pay bribes to officials to speed up the process, to not lose paperwork, or to allow them to pass through the border post. With traffic control, drivers sometimes pay bribes to officers instead of paying a very expensive fine for speeding or some other violation, such as having a burnt out headlight. The corruption in traffic control tends to happen more on the Trans-Caprivi corridor in the Caprivi Strip. The corruption with traffic control is not a large problem yet, but left unaddressed, it could exacerbate the corruption problems in the industry.

Customs officials denied hearing or seeing any type of corruption at the border posts, and larger transporting companies do not want to know if their drivers are paying bribes as it gives their businesses a bad name. However, they have heard of their drivers encountering these situations. If freight forwarders find out that their transporting companies are involved in corrupt activities, they terminate business ties with them. If the driver does end up paying a bribe, the money comes from his own pocket, but is sometimes reimbursed by the company. This generally this happens with smaller transporters. Corruption in the transport sector, specifically the trucking industry, inhibits Namibia's advancement to the standards of well-developed transport sectors.

4.2.2 Road Infrastructure

In terms of infrastructure, the roads in Namibia are in extremely good condition compared to neighboring countries. About 80% of the roads in Namibia are well-maintained, however, when a driver leaves Namibia the quality of the roads decline greatly (Groenewald, 2013). Angola is still trying to restore its roads after years of internal conflict and it is easier to travel on the gravel roads than on the paved roads due to the many potholes that can cause severe damage to trucks. In South Africa, the roads are poorly maintained and deteriorating. Roads in Botswana and Zambia lie somewhere in

between these two categories, neither up to the standards of Namibian roads, nor as deteriorated as those of Angola.

Because the road infrastructure in Namibia is of higher quality, it can allow for more traffic. However, more truck traffic on the roads emphasizes the problems created by a lack of truck stops on the corridors. Among the trucking companies that we interviewed, there was a complete consensus that a shortage of truck stops causes major problems. Without truck stops, drivers are forced to sleep in their trucks on the side of the road, leading to security issues for the truck drivers since they are unable to defend themselves while they are asleep - cargo, diesel fuel, and other parts of the truck are vulnerable to theft. These types of thefts either slow down or prevent the delivery of goods. Truck stops could also increase a driver's access to health services, reducing sickness.

4.2.3 The Trucking Industry: Big vs. Small Companies

There is a clear division in the trucking industry of Namibia between large and small businesses. After Namibia gained its independence in 1990, the gap between the small companies and the large companies became larger. For the transport sector to expand, the gap must be reduced. Many contracts are given to the larger companies as they have more trucks and drivers and have a reputation for delivering goods on time. Small and Medium-sized Enterprise (SME) transport companies, on the other hand, are not given as many opportunities as larger companies due to the lack of equipment and opportunities to prove themselves. It is also common for larger freight forwarding companies to set up contracts with larger transporting companies. Over time, a relationship builds between the two companies and the larger transporter is used more frequently, causing SME's to be left out and unable to do business with larger freight forwarding companies.

Many small transporting companies may not have completed the requirements to be a transporter for larger companies and freight forwarders. The freight forwarders we interviewed had

requirements such as sufficient insurance on their vehicles and cargo to cover the loss of the shipment, bank checks to prove the status of their accounts, tracking systems for trucks, and background checks on both drivers and companies. Transporters have to fulfill these requirements in order to work with the freight forwarders. All of the freight forwarding companies with whom we talked informed us that they are willing to give smaller transport companies an opportunity, but once most of the small companies find out about the previously mentioned requirements, they are not heard from again.

All transporting companies perform regular maintenance on their trucks to limit the number of breakdowns during deliveries, in accordance with their own policies and where applicable, those of the freight forwarders for whom they work. All trucks are equipped with a tracking system to monitor the progress of deliveries and update customers. Another system, mounted into most trucks, monitors the trucks speed. Sometimes cameras are also installed in truck cabs. Most trucking companies insure their trucks and have varying levels of insurance on the cargo, however smaller companies may have trouble affording some of these additions.

4.2.4 The Rail Industry: Loss of Workforce

There is a shortage of qualified train drivers in Namibia. In approximately five years over 50% of the train driver workforce will retire without any new drivers to take their places. With the Namibian unemployment rate hovering over 50% (as of 2012) it would seem that it would be very easy to replace the retired drivers. However, there is a skill deficit that needs to be addressed. A two-year training program is required for all train drivers, as well as a two-year apprenticeship where the driver-in-training acts as the assistant to the train driver. Thus there must be a minimum of four years of training before someone can be hired as an official train driver. Without enough drivers the rail system will be severely compromised and suffer a massive loss of institutional memory.

4.3 Bottlenecks in the Transport Sector

In this next section, we will describe the aspects of the transport and logistics sector that contain major bottlenecks. These are found mainly at the Port of Walvis Bay, in the customs clearing process, and TransNamib.

4.3.1 Port of Walvis Bay

Namport operates on the “key” or landside of the port. They operate the large cranes, which are used to stack and sort containerized and break-bulk goods in the port and other equipment such as trucks for transport and maintenance vehicles. Namport is also in charge of the administrative side of the port’s functioning including marketing and human resources.

Namport employs nearly 3000 people. Seven hundred and fifty of these employees work directly for the port as board members, executives, and other management positions. Board members are appointed by the Ministry of Works and Transport, and the board appoints executives. Each appointment is for a five-year term. The dockside workers at Namport work in a twelve-hour two-shift system. This system results in a large amount of overtime from employees that have already been working for twelve hours, who are then needed to cover additional shipments coming into the port.

The internal operations at the port are 24-hours a day – meaning that some cargo, mainly containerized, can be loaded and unloaded from ships and moved within the port at all hours; however, nothing can be moved outside of the gates of the port after 5:00 pm. Namibian stevedoring companies and the dockside Namport employees work to move ships in and out of the port at all hours, but customs officials observe regular business hours. There are not enough customs officials employed in the port to make the customs operations at 24-hour process. During this time, trucks are forced to wait until the port opens to pick up their shipment. This is valuable time that is lost for making a delivery and the truck drivers must work even harder to make their deadlines.

Dedicated berthing windows also cause issues at the port. Dedicated berthing windows are time periods contractually set aside for certain shipping lines to dock and unload their vessels. These berthing window contracts are renegotiated on a yearly basis and require minimum volumes of cargo to be shipped through the Port of Walvis Bay. Though these berthing windows may seem like they would make shipments more reliable, they can, in fact, do the opposite. Shipping lines with dedicated berthing windows at numerous ports will skip over one port to make a berthing window at the next if they are behind schedule. Ships may also leave the port without loading exports from Walvis Bay, leaving the cargo stranded until the next time that shipping line enters the port, delaying shipments greatly.

Both Namport and NSS executives believe that the port is not yet at capacity, but it is close and is only limited by the size of the port and its hours of operation. There are currently only three out of eight berths that are capable of handling ships with containerized goods and NSS believes that they could handle a larger number of ships if more berths were available. The average turnaround time for ships from the port is 48 hours, and stevedoring companies can unload a typical ship in an hour. When asked how many ships they were able to unload in one day, Mr. Louw executives stated that they were unable to provide an accurate number, as this number is greatly impacted by the number of ships in and out of the port each day, suggesting they are not working at capacity.

4.3.2 Customs

Customs Paperwork

The paperwork procedure at customs border posts has been simplified significantly since implementation of the SAD 500 in 1995. It replaced the system of having numerous documents for each imported and exported commodity. Nevertheless, there is no electronic way for filling out and sending in the paperwork. Everyone must do this manually; this is a time consuming process especially for

someone who has little experience with customs. The same basic information has to be filled out for multiple forms, making the process unnecessarily repetitive.

Completing the paperwork at the port to clear a ship for customs is also a time intensive process. Though there is some use of a digital system to compile data for submission to customs, there is no way to actually submit the necessary documents electronically. They must then be delivered in person to be signed and stamped by both customs and Namport officials at different locations at the port. There is also no online database listing the documentation for each type of commodity being imported or exported through the port. Extensive knowledge of this process is necessary to be successful and timely when filing paperwork for the clearance of goods, and constant education is needed as customs policies change.

Customs Clearance Procedures

The process by which ships are cleared for the transfer of goods impedes the movement of ships in and out of the port and increases the dwell times of ocean liners and the cargo being shipped. Ships arrive in the port after being piloted in by a Namport employee who has been sent out to the boat via helicopter. Once the boat has arrived, it must be boarded, the manifest and ship inspected, and then cleared. The procedure takes an average of one hour to complete, if all paperwork is properly supplied and completed.

The operating hours of customs officials also increases dwell times for vessels in the port. Ships are unable to be inspected after regular business hours, so they must wait until the next day to be cleared. The overnight delay greatly increases the amount of time the ship spends in the port, and as approximately 70 - 75% of a vessel's cost is incurred while docked, it would be ideal to reduce time at the dock, according to Mr. Louw.

Multiple Border Posts

One of the major problems transporters face at borders is that they must pass through the Namibian border post and the border post for the country they are entering or exiting. The time it takes to get through the Namibian border post can take a few hours, and going through the other country's border post makes the process twice as long. As Namibia and Botswana follow the same tariff book, they mostly follow the same processes and transporters encounter the same problems on both sides of the border. The main difference indicated to us by a Namibian customs official was that the Namibian post requires bonds or cash along with the paperwork to move all goods through while Botswana only requires paperwork. Although there is some communication between officials on both sides of the border, the joining of the posts would greatly reduce the transit times between countries.

4.3.3 TransNamib

Namibia has to improve its rail system in order to keep the transport sector competitive with those of other countries. Mr. Tjivikua described the rail system as the “backbone of transport in Namibia,” with the railway having its history based in German mining enterprises. However, it is clear that the “backbone” of Namibia is struggling to stay viable. The largest problems facing the sector are insufficient capital, poor management, and decaying rail infrastructure. Investments are not being made in the rail system. One of the main reasons is the poor management at TransNamib. In 2012, Titus Haimbili, the former CEO of TransNamib, was dismissed because of fraudulent spending of TransNamib's resources in the amount of N\$500 M (Poolman & Shipanga, 2012). This recent mismanagement has made investors wary to invest any capital in a potentially corrupt company.

TransNamib's locomotives are 47 years old, when safety regulations state that locomotives should be replaced after 25 years, according to Mr. Tjivikua. TransNamib has 71 locomotives and of those, only 49 are actually operational. In order for the railway to become a competitive operation, it

would need to have more than 100 additional locomotives. To help combat derailments, TransNamib runs its locomotives at lower speeds; however, these low speeds prevent goods from arriving quickly and deter transporters from using rail to ship cargo. The locomotives are so outdated that one locomotive does not have enough power to pull a normal 24-freight wagon train, so TransNamib has to use two locomotives for every train. This is a huge cost for TransNamib because of the large consumption of fuel. Due to the archaic locomotives, TransNamib's engineers have to use outdated equipment because new equipment is not able to fix the old locomotives.

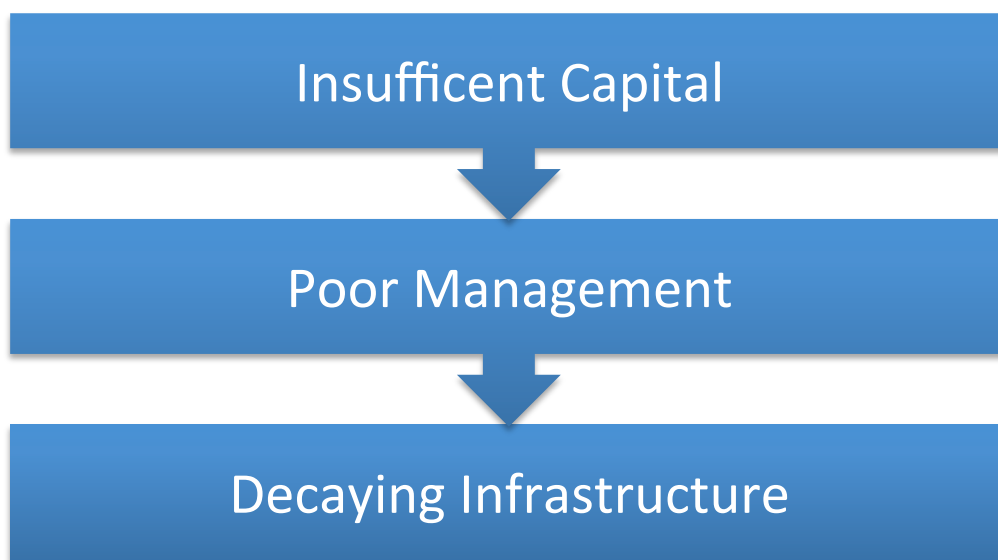


Figure 4.3.1. Decaying Process of the Rail

Mr. Tjivikua voiced his concerns about the Namibian government not having the capital or the drive to invest in the railway. He also felt that the Namibian government sets the transport sector as a low priority as it focuses its efforts on education, energy and healthcare projects. However, after speaking with members of the NIC it was apparent that efforts were being made to find investors to back railway infrastructure projects. Only the private sector seems to have the capital to invest in the railway system, but due to current trade laws it is difficult for private investors to fund projects, like the

upgrade of the railway infrastructure because the Ministry of Trade and Industry is not yet comfortable letting go of its control of this sector.

Since there is a lack of investment, feasibility studies have been conducted on the rail corridors to show the government as well as the private sector what is needed to upgrade the outdated narrow gauge tracks to newer narrow gauge tracks. Investment projects to upgrade the narrow gauge tracks were initiated in 2009, with the backing of NIC, but no progress had been made as of March 2013.

Namibia is part of the Southern African Railway Association (SARA). Each of the member countries of SARA have narrow gauge tracks, so in order for Namibia to be able to upgrade its narrow gauge tracks to broad gauge, which would be the ideal strategy, all of the member countries would have to agree to upgrade.

4.4 A Case Study on Transporting Machinery

To understand the importance of the transport sector to the Namibian economy, one must look at the industry in greater detail. To do this we have created a qualitative diagram of the transport of machinery, specifically along the Trans-Caprivi corridor. Machinery is a commodity that frequently passes through the Port of Walvis Bay, and it is the category that includes mining and offshore drilling equipment. Machinery is usually transported from Zambia and South Africa to the Port of Walvis Bay. It is also shipped to Zambia and Angola from the port.

Machinery, like most goods, is transported on ocean liners to the Port of Walvis Bay as either break bulk or containerized cargo. Upon arrival in the port each ship is cleared by members of customs and unloaded by one of the three stevedoring companies in the port – NSS, Erundu Stevedoring, or Walvis Bay Stevedoring. The machinery is then either moved to a holding area to be picked up later, or for safety purposes, heavier equipment is loaded directly onto trucks. From this point the goods are then warehoused onsite or in a forwarding/clearing agent warehouse, or shipped directly to the final

destination. In some cases police escorts are required to ship this commodity if it exceeds certain size dimensions (greater than 3.2 meters in width). The diagram below demonstrates the flow of machinery from its arrival in Walvis Bay to its final destination.

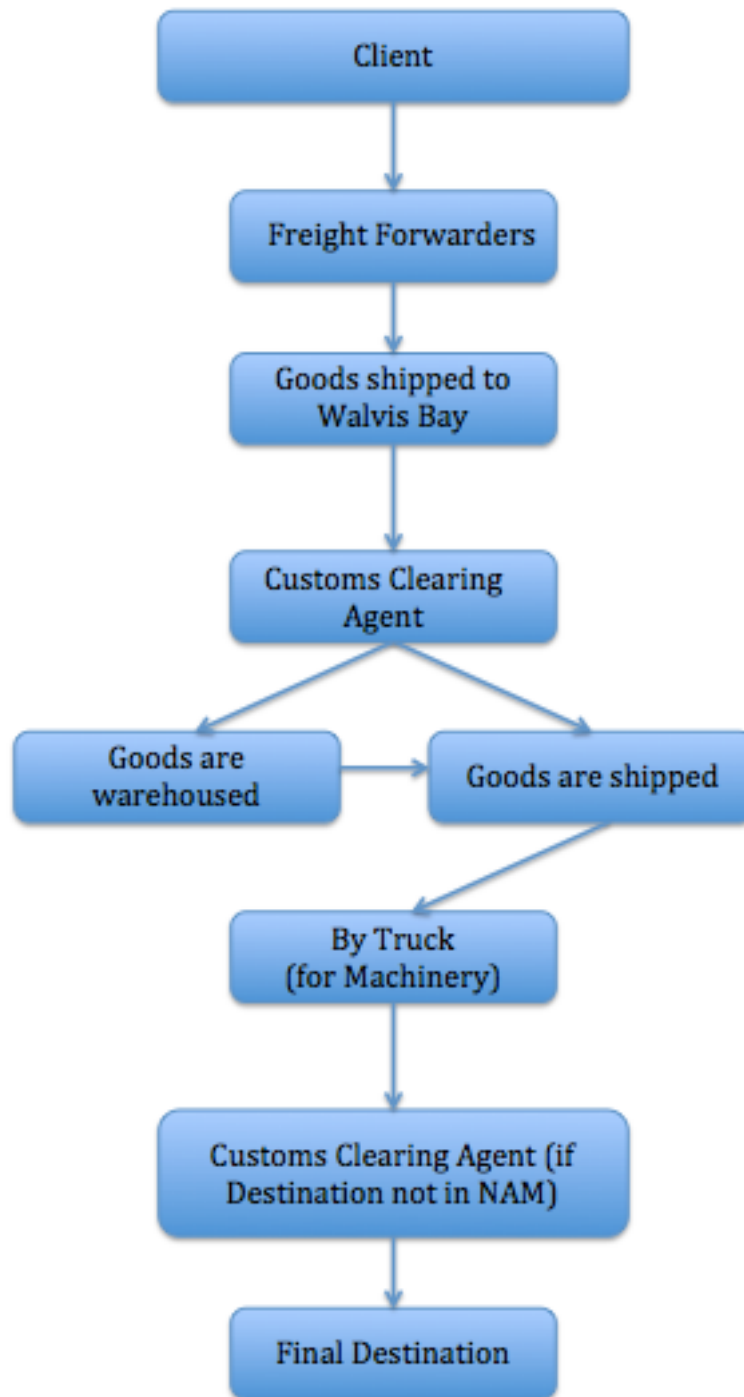


Figure 4.4.1. Flow of Goods from Arrival at Walvis Bay to Final Destination

To demonstrate the full impact of the transport and logistics sector on the Namibian economy, it is also necessary to look at the sector's supporting industries. The revenue generated from freight forwarding companies through the shipment of machinery, for example, passes through a number of other service industries such as the food industry and repair shops, adding income to each company with which it comes in contact. The distribution of goods is far reaching and cannot be ignored when looking at the importance of investment in the transport and logistics sector.

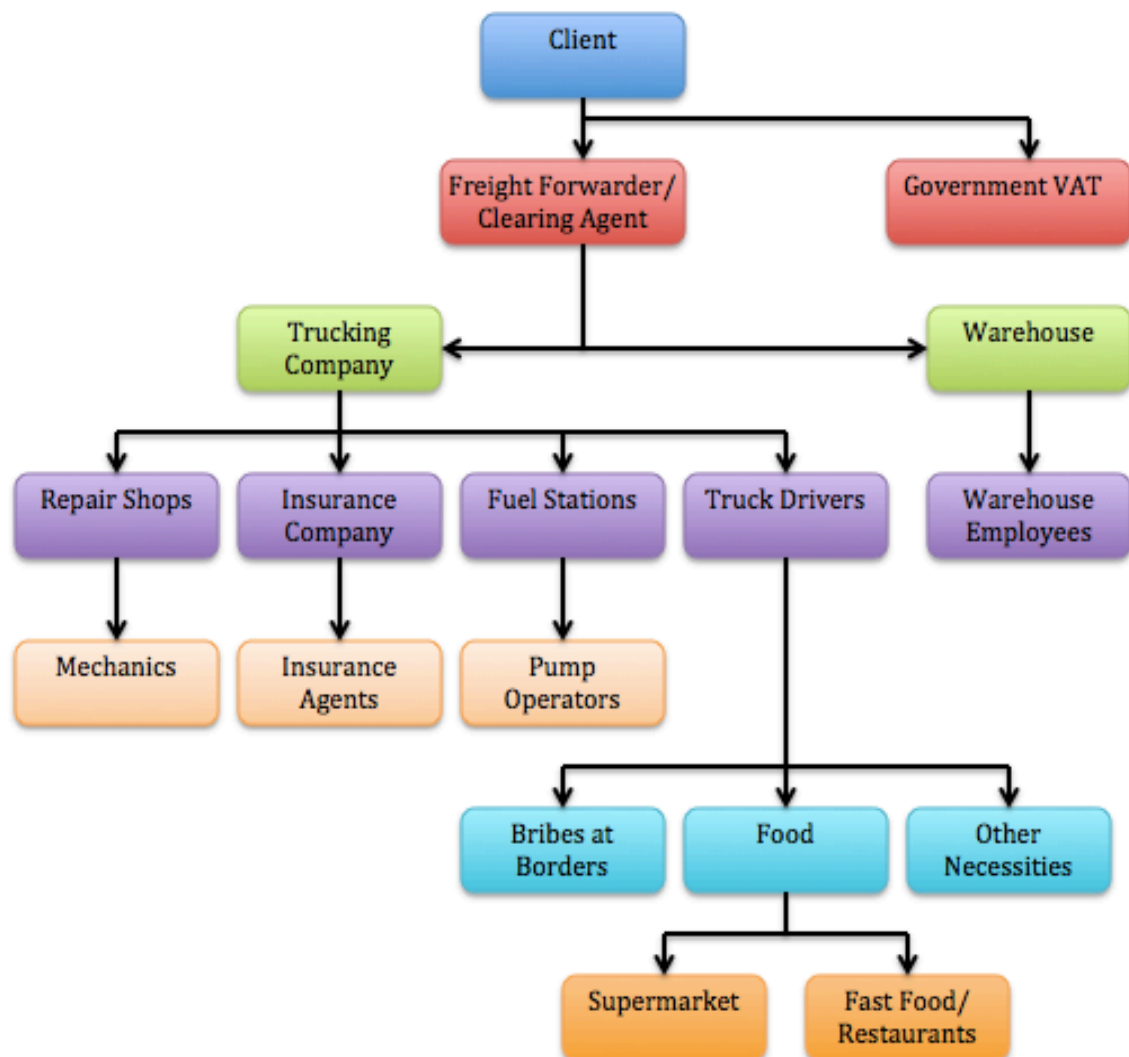


Figure 4.4.2. Flow of Revenue from Arrival at Walvis Bay to Final Destination

4.5 Summary

Our interviews revealed areas where limitations on the capacity of the sector lie. Six major causes of bottlenecks were identified from our interviews with industry members: customs paperwork, slow customs clearance procedures, the use of multiple border posts, lack of 24-hour port and customs operations, poor rail infrastructure and outdated locomotives. We were also able to create a diagram to demonstrate the far reaching effects of the sector on its various supporting industries. In the next chapter we will be discussing conclusions from our research, and the nine recommendations we have developed to enhance the capacity of the transport and logistics sector in Namibia.

Chapter 5: Conclusions and Recommendations

In this chapter will we discuss the conclusions we have made from our findings, and present the recommendations we have developed for the transport and logistics sector.

5.1 Conclusions

Our first objective was to determine the contribution of the transport and logistics sector to Namibia's economy, specifically involving the goods shipped across Namibia through the Port of Walvis Bay to other southern Africa countries. We found that the contribution is small compared to the sector as a whole. Thus, the largest part of Namibia's transport and warehousing percentage of GDP comes from domestic and regional transportation of goods as well as imports and exports. There should be more investment in the transport projects that address the capacity issues and major bottlenecks. This can increase growth of transit goods and help them a greater contribution to Namibia's economy.

Other objectives were to assess the capacity of Namibia's transport and logistics sector and to identify any bottlenecks slowing down or preventing the shipment of goods. We determined that ocean-based shipping and the trucking industries are in good condition yet there is definitely room for improvement. The port expansion for Walvis Bay will greatly enhance its capacity, but the expansion has been in the works for about eight years and construction has not started, leaving the port at a disadvantage. As for trucking, there is growing divide between SME trucking companies and larger trucking companies, which must be rectified in order for the industry to grow. Also, SMEs must be made aware of the full range of requirements necessary to be a respected and reliable business partner for freight forwarders. The rail system is in desperate need of investment. The equipment and infrastructure of the railway has aged considerably and needs to be fully repaired or replaced. Rail is also in urgent need of new train drivers as about 50% of the drivers retire within the next five years.

We found that the major bottlenecks in the transportation of transit goods happen at customs checkpoints. The paperwork needed to transport goods through customs checkpoints must all be done and submitted manually, which is inefficient and opens up the process to more errors that delay the shipments. Other minor bottlenecks occur, but they are not as substantial as the delays caused by customs.

From our case study, the creation of a qualitative diagram, we have found that the transport and logistics sector has a widespread influence on Namibia. This can be demonstrated through the economic effects on various supporting industries.

5.2 Recommendations

Below are nine recommendations we have developed to enable a sustainable increase in the capacity of the transport sector. The recommendations are based on our analysis of the economic impacts, the assessments we made, and the major bottlenecks we identified within the sector. The nine recommendations are as follows:

5.2.1 Recommendation 1: Greater Investment in Transport Sector

As we showed in section 4.1, the transport and logistics sector does not contribute significantly to Namibia's GDP at this time. The sector could contribute much more to the economy if more were invested in the sector. The government and private investors must invest more in improving the transport and logistics sector. By increasing investment in the sector, more jobs can be created, and more goods will be able to be transported. Many people are involved in the transportation of a single commodity. By investing in transportation efficiency, all of those people benefit from the increase in economic activity.

One reason that people may not be investing in the sector is because of inadequate marketing strategies and inefficient management of funds. The Ministry of Trade and Industry, specifically NIC, needs to develop a marketing plan that advertises certain projects to specialized groups instead of advertising all of their projects to a broad range of investors. NIC's marketing strategy does not specifically emphasize projects in the transport sector such as the port expansion and creation of truck stops. They believe that as other projects progress, a spiraling effect occurs where the transport sector improves with those projects. However, we believe it should be the other way around. The government should also spend less on the advertisement. By spending N\$150 M advertising different projects, the Namibian government is losing out on making its own investments.

5.2.2 Recommendation 2: Reduce Corruption

One major concern that came up in our research was the corruption that members of the transport and logistics sector encountered while transporting shipments. These situations occur most often with customs officials and traffic control officers. Although most stakeholders of the sector choose not to be involved with corruption, there are still many transporters giving into the corruption in order to meet their deadlines. The salaries of customs officials and traffic control officers should be increased and a strict penalty of job loss be applied to those who partake in bribery. By doing this, officials in the transport and logistics sector will have a higher standard of living and will be less tempted to solicit bribes. They will also place higher value on their job and they will not want to lose a high paying position.

Traffic fines should also be reduced. There has been an approximate 300% increase of fines, and truck drivers are more willing to pay a small bribe directly to a traffic control officer than to pay the entire traffic fine. If the fine is lowered, there will be a decrease in the number of bribes paid to and requested by traffic control officers.

5.2.3 Recommendation 3: Focus on Truck Stops

For Namibia's transport and logistics sector to grow efficiently, truck drivers will need a place to stay when they are making long haul deliveries. To provide for this, truck stops should be added along the Namibian corridors to help improve the health and safety of truck drivers as discussed in the 2009 IQP completed with WBCG (Early, Jones, Laine, & Rickard, 2009). With the truck stops, drivers will be able to park their trucks in a secure parking lot, lowering the risk of having parts of the trucks as well as cargo stolen. The truck stops would also provide drivers with a place to sleep instead of being forced to sleep in their trucks. Well-prepared food, clean water, and health clinics should also be provided at these stops so truck drivers can eat healthy food and have fewer issues dealing with sickness. Though we are aware that this is a restatement of recommendations previously made, we feel that not enough progress has been made in the four year period since that study was conducted.

5.2.4 Recommendation 4: A Policy to Help SMEs Succeed

The lack of skilled workers in Namibia has contributed to an undesirably high unemployment rate of over 50% (as of 2012). It is difficult for SMEs to succeed because Namibian banks are not willing to give out loans in this economic climate when entrepreneurs do not have the required collateral. The Ministry of Trade and Industry needs to enforce a policy that helps small businesses flourish by creating an Industry Requirement Checklist and then rewarding businesses that meet the industry requirements with low interest loans. The checklist should include the requirements that freight forwarding companies demand of their transporters. The checklist would include the specific insurance policies the SMEs would need, the needed tracking systems in trucks, and the background checks that need to be completed on employees. To accomplish this, the government needs to work with WBCG, the Namibian Logistics Association (NLA), and freight forwarding companies to set industry standards. With these

standards in place, and with the financial support from the government, SMEs will be able to succeed in the mainstream economy.

The attitude of business owners in Namibia has gradually changed over the years. The old strategy was to safeguard one's own company by taking on as much business as possible. Essentially, this greed from larger companies and the inability of SMEs to deliver the same services at a competitive rate forced many businesses to go bankrupt and kept smaller companies from growing. Our research suggested that successful companies in Namibia take an active role in the corridor system and grow at a steady rate. Sharing clients that companies cannot handle themselves has helped industries grow, and helped SMEs thrive. A combination of political cooperation, improved infrastructure, and motivation from the correct sources will help Namibia fulfill its potential.

5.2.5 Recommendation 5: Hire and Train New Locomotive Drivers

TransNamib needs to immediately begin a campaign to advertise the employment opportunity of becoming a train driver. If new train drivers are not hired within the next year there will not be enough drivers to match the current capacity of the railway and thus there will be no room for growth in the rail industry, and potentially decay. TransNamib needs specific employees to focus on creating an advertisement campaign to pique interest among the younger generation to fill these jobs. The new recruits should begin the four year training process so that by the time the 50% of train drivers retire, there will be enough trained personnel to replace them and prevent a loss of institutional memory.

5.2.6 Recommendation 6: Port Expansion

For the transport and logistics sector of Namibia to operate at an increased capacity, the first bottleneck that must be solved relates to the limitations created by the size of the Port of Walvis Bay. For the past eight years there have been discussions and proposals for the expansion of port facilities (including berths, warehouses and storage areas for more containerized cargo) but no progress has been

made, except for the dredging of the port. Namport should continue with its plans to expand the port and begin the expansion as quickly as possible.

5.2.7 Recommendation 7: Customs Clearance Simplification

Customs clearance causes a number of delays throughout the transportation process. To reduce this, software must be developed, or implemented if appropriate software already exists, that would link clearing and forwarding agents with Namport and customs officials. A program such as this would theoretically allow freight forwarders and the clearing agents they use to electronically submit all paperwork by filling out one generic form. The software would then insert the data into the proper fields in the appropriate documentation for the specified commodity.

Another aspect of the customs clearing process that can be improved to reduce delays is the use of a single window system. This would require having only one checkpoint for commercial shipments at the borders, as opposed to the two that are currently in use on either side of the border. As this process has already begun, it should be expedited and implemented as soon as possible. One set of documents and one clearance would be required for a truck to pass through each border. Standardization of documents and policies for cargo among SADC countries would greatly ease the transition to this single window system, and could eliminate many of the delays on its own.

The procedure for clearing ships at the port also adds extra time to the process of shipping goods. Once a ship is docked it then must be cleared before it can be offloaded, as previously mentioned. To cut down on time spent inspecting ships, a customs official should be sent out to each vessel with the Namport pilot that navigates the ship into the port. While the ship is being brought to its berth, it can be cleared and made ready for immediate offloading upon its arrival. This would decrease the time a vessel is at its berth by approximately one hour allowing the next ship on the queue to dock earlier, increasing efficiency at the port.

5.2.8 Recommendation 8: Port Improvements

The limited hours of operation at the port decrease the number of ships and containers that can be moved in and out of the port daily. The port needs to move to a 24-hour full operation schedule. To do this, there must be a switch to a three-shift system for both Namport dockworkers and customs officials and an increase in the number of employees in both offices.

At this point, it seems that Namport's dockside workers do not fully understand the important role they play in the transport and logistics sector. To demonstrate how small delays in fulfilling their daily duties can result in great delays for the final delivery of a shipment, an educational orientation should be implemented for new hires, as well as those that are already employed at the port.

5.2.9 Recommendation 9: Private Sector Involvement in TransNamib and Namport Operations

Many stakeholders expressed dissatisfaction with the response time of both TransNamib and the Namport. TransNamib has an aging workforce and uses an outdated rail system that does not reach the borders with the surrounding countries. An adequate rail system would relieve the roads of additional trucks and help to preserve the road infrastructure. It is also much cheaper to ship goods by rail. Many transporters we spoke with would opt to use rail if it were more reliable. TransNamib lacks the funding and motivation from the government to expand and improve.

Our research also showed that the port functioned adequately to accommodate the potential business that might utilize it. A major inefficiency is the fact that the Ministry of Works and Transport appoints the CEO of Namport every five years, and in the opinion of some members of the transport and logistics sector, these individuals do not always have proper knowledge of the system to make consistent progress to expand the port. A training/promotion pipeline system could be developed to ensure those appointed to executive positions are prepared for the task at hand. A more efficient port

and process for hiring Namport executives would accommodate additional business and would allow transport and logistics companies to expand and increase the contribution of the transport sector to GDP.

TransNamib and Namport should consider involving the private sector in their operations. With private sector interest comes increased efficiency. There is capital in the private sector to upgrade the railway and locomotives. By allowing private companies to control and operate some of the berths and portions of the container terminal in the Port of Walvis Bay, the port could increase its overall efficiency especially after the port expansion has been completed. These two government parastatals should not be completely privatized in the near future. However, the Namibian government should consider restructuring these companies as public-private partnerships, like WBCG. The first step towards this restructuring involves extensive internal review of operations and efficiency within Namport and TransNamib.

5.3 Summary

We hope our recommendations will help WBCG facilitate improvements in the transport sector's capacity and in the cross-border trade of Namibia. As the transport and logistics sector expands with infrastructural developments and more efficient marketing from WBCG, there can be a long-term sustainable effect on the country by contributing to achieving Namibia's Vision 2030.

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Appendix A: Sponsor Description

The Walvis Bay Corridor Group (2013a; 2013d) is an organization that was established in 2000 to advocate for the use of the Walvis Bay Corridor system that connects the Port of Walvis Bay to other parts of Namibia as well as neighboring countries. The WBCG's mission statement consists of the following objectives. The organization wishes to facilitate transport and trade along the Southern African Corridors. It wants to provide innovative services, exceed customer expectations and add value through being a Public-Private Partnership (PPP). It also wishes to apply principles of good corporate governance.

WBCG (2013a) is set up in the form of a PPP. This means it has a unique way of functioning because the organization has stakeholders and member companies from both the public and private sectors. The group functions like a "think tank," giving advice to its customers. It is able to align the interests of the governmental organizations with those of potential private investors to secure funding for various development projects dealing with the four transport corridors of Namibia. Figure A-1 shows a simple diagram of WBCG's organizational structure (Finland Grant, 2011, p. 1). Finland and Sweden are two countries that provide a lot of funding to the organization. The member companies of the WBCG are able to pool their resources in an organized fashion to operate efficiently.

The WBCG (2013f) is a small organization, comprised of less than sixteen employees in the Windhoek branch and a board of directors. The main office for the WBCG is located in Windhoek, Namibia, but there is also an office in Zambia. Each of the employees has a unique job, which allows them to be in charge of different facets of the organization. There are some employees who are liaisons to the twelve partnering organizations. Mr. G.A. Uirab is the chairman of the board of directors, and the CEO is Mr. Johny Smith. Mr. Gilbert Boois is the manager of projects and funding and will be our direct contact for this project. The WBCG (2013e) in recent years has developed the HIV/AIDS Help Desk, with

Edward Shivute as project coordinator. The mission of the HIV/AIDS Help Desk is to “to mitigate the impact of HIV/AIDS within the WBCG member companies by facilitating the development and implementation of comprehensive workplace programs” (para. 2).

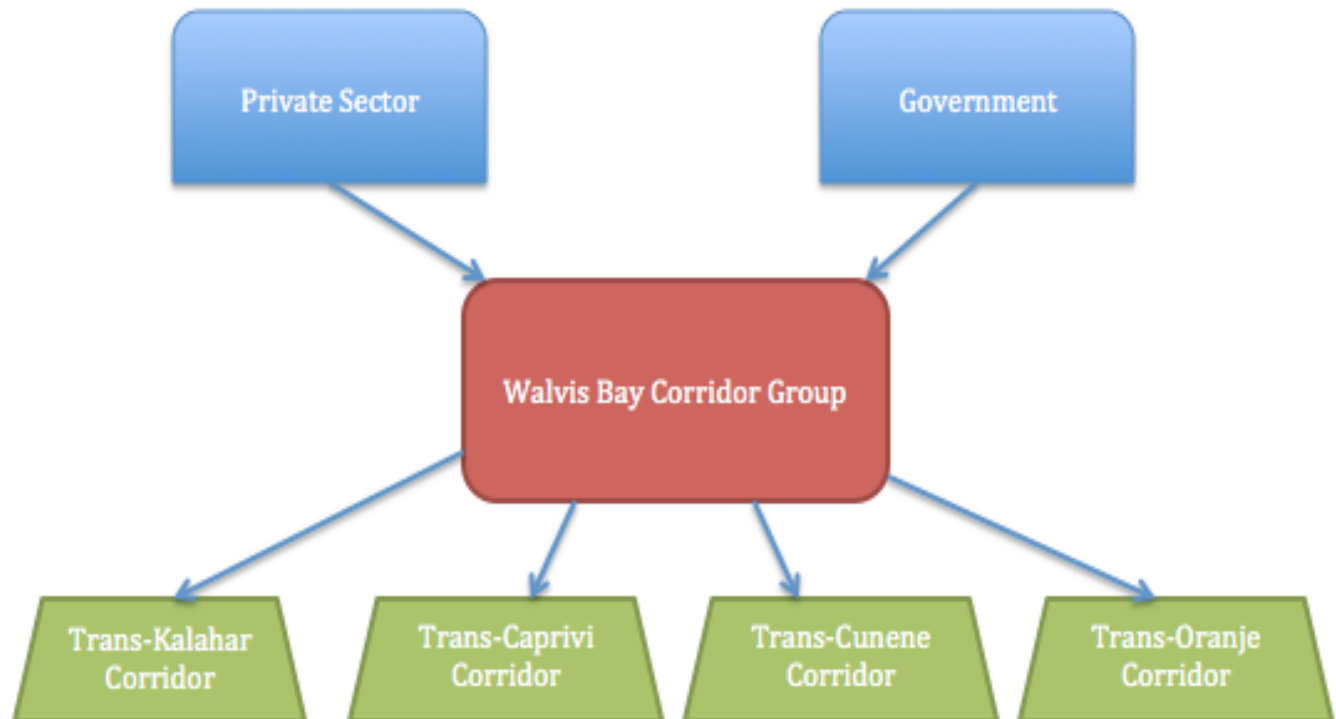


Figure A.1. Organizational structure of Walvis Bay Corridor Group

The Walvis Bay Corridor Group (2013a; 2012c) works in conjunction with its members to facilitate projects that will improve the corridor system. The WBCG often receives funding on a case-by-case basis for certain projects. An example of this would be when the WBCG received financial support from the Development Bank of Namibia to improve the Okavango River Bridge (Divundu Bridge) on the Trans-Caprivi Highway. The WBCG does not just give financial support to its clients. The organization primarily gives consulting advice. It is an umbrella organization for open communication among the transport/logistics industry companies. The WBCG (2013e) also provides HIV/AIDS clinics on the corridors in conjunction with the Helpdesk.

As mentioned above, the WBCG (2012b; 2012c; 2012d) works with many countries and organizations to help achieve its mission. All of these organizations and countries are able to collaborate and pool resources so they can strive for the most effective trade and goods transport system.

The Walvis Bay Corridor Group (2013b) also has partnerships with regional groups, such as the Trans- Kalahari Secretariat and Trans-Caprivi Corridor Management Committee. These committees work together to establish standards across borders and tackle problems in the trade industries between countries of the Southern African Development Community (SADC) region. With these and other partnerships, the WBCG is able to work efficiently to regulate the trade and transport of goods, maintain road safety and quality, and promote economic development along the corridors.

Appendix B: Consent Script and Questions for General Stakeholders and Transport and Logistics Industry Members

Informed Consent Agreement for Participation in a Research Study

Investigators: Elizabeth Dufresne
Louisa King
Kyle Richardson
Contact Information: walvisbay@wpi.edu
Skype Name: walvisbayiqp
Title of Research Study: Enhancing Capacity in the Transport Industry in Namibia
Sponsor: Walvis Bay Corridor Group

You are being asked to participate in a research study. Before you agree, however, you must be fully informed about the purpose of the study, the procedures to be followed, and any benefits, risks or discomfort that you may experience as a result of your participation. This form presents information about the study so that you may make a fully informed decision regarding your participation.

We would like to invite you to participate in an interview with us. We are working with the Walvis Bay Corridor Group to assess the capacity of the transport and logistics of Namibia. We would like your input to understand the inner workings of the operations in the transport and logistics industry. With your help we hope to be able to identify obstacles that occur. Our research will be published. This interview will ask you questions about the organization of the industry, your company's programs, statistical data about its operations, and any opinions you have about the transport and logistics industry. This interview should only take up about 45 – 60 minutes of your time; however we are flexible and will accommodate your schedule. Your name and any other identifiable information will not be collected or recorded unless you give us explicit permission to record it. The interview transcript will not be published; however, some individual responses may be included in the final report with your consent. This is a voluntary interview, if you do not want to participate in it that is perfectly acceptable. If there are any questions you do not want to answer let us know and we will move on to the next question. Feel free to ask any questions you have about the study or stop us at any time during the interview if a question arises.

May we publish your name in our research?

☐

Yes

☐

No

Study Participant Signature

Date: _____

Study Participant Name (Please print)

Date: _____

Signature of Person who explained this study

Interview with Customs Officials

1. What is your job title?
2. What primary functions does your job involve?
3. What paperwork must be done for truckers and other travelers passing through customs checkpoints?
 - a. How long does this paperwork take?
 - b. Are you using the SAD 500?
 - i. How has the SAD 500 affected wait times?
 - c. What aspects of this process should be improved?
 - i. If the SAD 500 is effective, are the inspection times what create the most hold up?
4. What are the conditions of the buildings at your checkpoints?
5. Are there enough employees at this checkpoint?
6. What do you think should be changed in order to make the checkpoint more efficient?
7. Do you know of any customs workers that accept speed money?
 - a. Do you have any guess as to why they accept it?
8. Do you have communication with the Botswana officials
9. Where do you see the biggest inefficiencies at customs
10. If you could change anything about the process of going through customs, what would it be?

Questions for Freight Forwarding/Clearing Agents

1. What countries do you deal with the most?
 - a. In Southern Africa?
 - b. Outside of Southern Africa?
2. Do you deal with mostly domestic or international shipments?
3. How long does it normally take for a shipment to be transported through customs checkpoints in Namibia?
 - a. What type of system do you have set up for easing the process of getting through customs?
 - b. Is this system efficient?
4. Do you deal with transporting goods by rail?
 - a. If not: Why don't they use the rail?
 - b. What would make you use the rail?
5. What mode of transport do you use the most?
 - a. How would you rank them by importance or most used?
6. What are the prices for transporting dry and reefer 12 m and 6m containers to and from Walvis Bay and:
 - a. Angola, Botswana, DRC, Congo, Malawi, Mozambique, South Africa, Zambia, Zimbabwe, Kenya and Lesotho
 - b. How do prices differ for dangerous cargo?
 - c. How do prices differ for break bulk cargo?
7. What types of containers do you deal with?
8. Do you pay taxes on the goods or does the customer pay the taxes
9. Can you explain bond facilities to us?
10. Have you heard of freight forwarding companies having to deal with bribes at customs?
11. What is the process for shipping a container along the corridors specifically the Trans-Caprivi
12. How often do you transport machinery?
 - a. Where does the machinery normally come from and where is it shipped to?
 - b. How is it transported? Rail or truck?
 - c. How many people does it take to transport the machinery?
 - d. Can you describe the flow of machinery starting at the port?

- e. How many trucks and warehouses does it take to transport the machinery?
13. What types of warehouses are used to store containers?
- a. How many warehouses do you use to store goods?
 - b. How long do containers normally stay there?
 - c. What types of goods are stored in these warehouses?
 - d. What type of security is provided for the warehouses?
 - e. What other features are provided for the warehouses?
 - i. Ex. Cooling system/Freezer
 - f. How many people work at these warehouses?
14. Is there a way to avoid using warehouses?
15. How many hands does the cargo pass through when being delivered?
16. What are the major obstacles you encounter when delivering goods?
- a. Bottlenecks?
17. How often is cargo lost or stolen?
- a. Is there insurance for lost cargo?
 - b. What are major reasons for cargo being lost?
 - c. Do you use a tracking system for cargo or trucks?
18. Do you use your own trucks?
- a. If yes:
 - i. How many do you own?
 - ii. Are the trucks insured?
 - iii. How many truck drivers do you employ?
 - iv. Are the truck drivers insured?
 - v. Do you provide them health insurance?
 - b. If no:
 - i. What trucking companies do you typically work with?
 - ii. Do you ever use small businesses or only larger trucking companies?
 - 1. Why do/don't you use those companies?
 - iii. How much does it cost for their services?
19. What are some of the major obstacle you encounter when transporting cargo?
- a. What plans do you have to address these obstacles?
20. What do you see as the major bottlenecks in the transport sector?

Questions for Namibia Investment Centre (NIC)

1. How would you describe NICs purpose
2. What are your main goals for improving the transport and logistics sector?
3. What types of projects is your department focused on for the transport and logistics sector?
 - a. Infrastructure projects -2009
 - b. 1. PORT OF WALVIS BAY EXPANSION & DEVELOPMENT PLAN
 - c. 2. TRANS KALAHARI RAILWAY
 - d. 3. WINDHOEK – LUANDA CORRIDOR PROJECT FORMULATION
 - e. 4. WALVIS BAY CORRIDOR COMMERCIAL DEVELOPMENT
 - f. 5. THE ESTABLISHMENT OF FREIGHT VILLAGES IN NAMIBIA
 - g. 6. THE ESTABLISHMENT OF TRUCK STOPS ALONG CORRIDORS
 - h. How much progress has been made on these projects?
4. Who are the typical investors for the infrastructure projects?
 - a. How much are they willing to invest?
 - b. Are they difficult to work with?
5. Are you having trouble finding investors for certain projects?
 - a. Which ones?
6. Which project would be most beneficial to the transport and logistics sector?
7. Which project would be most beneficial to the economy?
8. How much focus do you put on the transport and logistics sector/infrastructure
9. Does being a subsection of the Ministry of Trade help or hinder your ability to find investors?

Questions for Roads Authority Weighbridge

1. What does your job at Roads authority entail?
2. What are some of the major projects the Roads authority has been working on?
3. Where does the funding come from?
4. Do you feel you have the money to accomplish your goals?
5. Are you in charge of the weighbridges throughout Namibia?
 - a. Can you explain the process of using a weighbridge?
 - b. How many weighbridges are there in Namibia?
 - c. How do you deal with the weighbridges being different from those in Botswana?
 - d. Do you have any communication with Botswana officials?
 - e. How often are the weighbridges calibrated?
 - f. How old are most weighbridges?
6. What is the process for hiring road workers?
7. How often are roads maintained?
8. Do you work SADC members to improve the roads in the entire SADC region?
9. How do you decide which infrastructure projects take precedence?

Appendix C: Consent Script and Questions for Ocean- Based Shipping Industry Members

Informed Consent Agreement for Participation in a Research Study

Investigators: Elizabeth Dufresne
Louisa King
Kyle Richardson
Contact Information: walvisbay@wpi.edu
Skype Name: walvisbayiqp
Title of Research Study: Enhancing Capacity in the Transport Industry in Namibia
Sponsor: Walvis Bay Corridor Group

You are being asked to participate in a research study. Before you agree, however, you must be fully informed about the purpose of the study, the procedures to be followed, and any benefits, risks or discomfort that you may experience as a result of your participation. This form presents information about the study so that you may make a fully informed decision regarding your participation.

We would like to invite you to participate in an interview with us. We are working with the Walvis Bay Corridor Group to assess the capacity of the transport and logistics of Namibia. We would like your input to understand the inner workings of the operations at the Port of Walvis Bay. With your help we hope to be able to identify obstacles that occur at the port. Our research will be published. This interview will ask you questions about the organization of Namport, statistical data about operations at the port, and any opinions you have about the industry and Namport. This interview should only take up about 30-45 minutes of your time; however we are flexible and will accommodate your schedule. Your name and any other identifiable information will not be collected or recorded unless you give us explicit permission to record it. The interview transcript will not be published; however, some individual responses may be included in the final report with your consent. This is a voluntary interview, if you do not want to participate in it that is perfectly acceptable. If there are any questions you do not want to answer let us know and we will move on to the next question. Feel free to ask any questions you have about the study or stop us at any time during the interview if a question arises.

May we publish your name in our research?

☐

Yes

☐

No

Study Participant Signature

Date: _____

Study Participant Name (Please print)

Signature of Person who explained this study

Date: _____

Questions for Namport Executives

1. What is your job title?
2. What primary functions does your job involve?
3. Are there any current plans in place to improve the efficiency of the port?
4. How long does it take for each ship to get unloaded?
 - a. What's the basic protocol for unloading a ship?
 - b. How many ships does your company unload in a day/week/month?
 - c. What's the dwell time for containers?
5. How many stevedores do you employ?
 - a. How many are working at any given point?
6. How the company is organized (who supervises who, etc.)?
7. What are the main complaints from the stevedores and other employees?
8. What is the customs process?
 - a. Are there areas for improvement with making the customs process more efficient?
9. What is the average turnaround time at the port?
10. What is your current Computer system used at the port?
11. Can you explain the process of Guaranteed Berthing windows?
12. Are the plans in place for making the port 24 hours?
 - a. Why is the port not 24 hours?

Questions for Namibia Stevedoring Services

1. What is your job title?
2. What primary functions does your job involve?
3. How is the company organized?
4. How many employees do you have?
 - a. How many stevedores do you employ?
5. What type of equipment/technology is used to run the port?
 - a. Do you think it is up to date?
 - b. How often does it break down?
 - c. If something breaks how fast is it replaced/ fixed?
 - d. What do you recommend be changed regarding the equipment and technology?
6. Where do you notice the biggest efficiency breakdowns at the port?
7. Do you know the average amount of times a ship stays at the dock?
8. What is the average amount of time you spend unloading one crate?
9. What type of cargo do you normally deal with?
 - a. Is there special training involved with loading/unloading different types of cargo?
 - b. Are all stevedores trained?
 - c. How long does training take?
 - d. What is the learning curve for becoming a stevedore?
10. What is the average number of containers unloaded in a day?
11. What is the average amount of containers loaded onto trucks in a day?
12. Have you noticed changes at the port during your time working as a stevedore?
 - a. Have you seen an increase in congestion?
13. Do you have deadlines for each ship?
 - a. Do you complete them?
 - b. How many stevedores does it take to unload an average cargo ship?

Appendix D: Consent Script and Questions for Trucking

Industry Members

Informed Consent Agreement for Participation in a Research Study

Investigators: Elizabeth Dufresne
Louisa King
Kyle Richardson
Contact Information: walvisbay@wpi.edu
Skype Name: walvisbayiqp
Title of Research Study: Enhancing Capacity in the Transport Industry in Namibia
Sponsor: Walvis Bay Corridor Group

You are being asked to participate in a research study. Before you agree, however, you must be fully informed about the purpose of the study, the procedures to be followed, and any benefits, risks or discomfort that you may experience as a result of your participation. This form presents information about the study so that you may make a fully informed decision regarding your participation.

We would like to invite you to participate in an interview with us. We are working with the Walvis Bay Corridor Group to assess the capacity of the transport and logistics of Namibia. We would like your input to understand the inner workings of the operations of the main transport corridors. With your help we hope to be able to identify obstacles facing the trucking industry. Our research will be published. This interview will ask you questions about the organization of the company, statistical data about deliveries, safety and insurance policies, and any opinions you have about the industry. This interview should only take up about 30-45 minutes of your time; however we are flexible and will accommodate your schedule. Your name and any other identifiable information will not be collected or recorded unless you give us explicit consent to record it. The interview transcript will not be published; however, some individual responses may be included in the final report with your consent. This is a voluntary interview, if you do not want to participate in it that is perfectly acceptable. If there are any questions you do not want to answer let us know and we will move on to the next question. Feel free to ask any questions you have about the study or stop us at any time during the interview if a question arises.

May we publish your name in our research?

☐

Yes

☐

No

Study Participant Signature

Date: _____

Study Participant Name (Please print)

Signature of Person who explained this study

Date: _____

Questions for Trucking Executives

1. What is your job title?
2. What primary functions does your job involve?
3. How is your company organized?
4. How many truck drivers do you employ?
 - a. How many trucks do you own?
5. Does your company insure the trucks?
6. Who pays for maintaining the trucks?
7. How much does it cost to replace a truck?
8. Are your drivers overwhelmed by the amount of deliveries they have to make?
9. Would hiring more drivers help solve this problem?
10. Are you able to increase the number of drivers you employ?
 - a. How often do you hire new drivers?
 - b. What is a typical salary for a driver?
 - c. What skill set do you require for a driver?
 - d. Who trains the drivers?
 - i. Do you take advantage of the training services of the NLA
 - e. How often do truck drivers leave the company?
11. What regions do your drivers deliver goods?
12. Do your drivers usually make deliveries from the port or from a delivery by rail?
13. In what areas does your company lose the most money?
14. What paperwork must be done for truckers and other travelers passing through customs checkpoints?
 - a. How long does this paperwork take?
 - b. Are they using the SAD 500?
 - c. How has the SAD 500 affected wait times?
 - d. What aspects of this process should/could be improved?
15. If the SAD 500 is effective, are the inspections times what create the most hold up?
16. Having read the case study of Eden Int'l done last year, we know you have had experience with corruption along the corridors:
 - a. Has the situation improved or worsened in the last year?
 - b. Are there any programs in place that you know of trying to combat this corruption?

- i. Anti-Corruption Act of 2003 - all gov't officials
 - c. Have you heard of a time when bribes were collected at a customs checkpoint?
 - d. Do the drivers themselves would pay the bribe or the trucking company?
17. What are the main complaints or suggestions from your drivers?
18. What, if any plans, do you have for future improvements?

Appendix E: Consent Script and Questions for Rail Industry

Members

Informed Consent Agreement for Participation in a Research Study

Investigators:	Elizabeth Dufresne Louisa King Kyle Richardson
Contact Information:	walvisbay@wpi.edu Skype Name: walvisbayiqp
Title of Research Study:	Enhancing Capacity in the Transport Industry in Namibia
Sponsor:	Walvis Bay Corridor Group

You are being asked to participate in a research study. Before you agree, however, you must be fully informed about the purpose of the study, the procedures to be followed, and any benefits, risks or discomfort that you may experience as a result of your participation. This form presents information about the study so that you may make a fully informed decision regarding your participation.

We would like to invite you to participate in an interview with us. We are working with the Walvis Bay Corridor Group to assess the capacity of the transport and logistics of Namibia. We would like your input to understand the inner workings of the operations of the rail industry of Namibia. With your help we hope to be able to identify obstacles facing the rail industry. Our research will be published. This interview will ask you questions about the process of shipping goods by rail, and any opinions you have about the rail industry. This interview should only take up about 45 minutes of your time; however we are flexible and will accommodate your schedule. Your name and any other identifiable information will not be collected or recorded unless you give us explicit consent to record it. The interview transcript will not be published; however, some individual responses may be included in the final report with your consent. This is a voluntary interview, if you do not want to participate in it that is perfectly acceptable. If there are any questions you do not want to answer let us know and we will move on to the next question. Feel free to ask any questions you have about the study or stop us at any time during the interview if a question arises.

May we publish your name in our research?

☐

Yes

☐

No

Study Participant Signature

Date: _____

Study Participant Name (Please print)

Signature of Person who explained this study

Date: _____

Interview Questions for TransNamib

1. What is your job title?
2. What primary functions does your job involve?
3. We would like to understand more about the railway industry:
 - a. Can you give us a brief history of the rail? How has the railway progressed over time?
What has caused some of the rail's successes?
 - b. How many trains does TransNamib maintain?
 - c. How many trains are used to make shipments?
 - d. How long do shipments take by rail?
 - e. What Types of cargo are carried on the rail?
 - f. Where do you make deliveries?
 - g. How much revenue is produced through carrying freight on the rail?
 - h. How long does take to load and unload cargo?
 - i. How many derailments do you tend to have each month
 1. What do you think causes those derailments?
 2. Are there steps in place to help cut down the number of derailments?
4. We understand that there was a feasibility study conducted for adding rail to the Trans-Caprivi (Walvis Bay-Ndola-Lubumbashi Development Corridor) and Trans-Kalahari. Can you elaborate on that study?
 - a. Has funding been acquired to add these new sections of the rail
 - b. Will the rail be added as narrow gauge?
 - c. Do you think it is beneficial to add additional narrow gauge before upgrading the entire system to broad gauge?
 - d. Do you see an upgrade to broad gauge in Namibia's future?

Appendix F: Samples of Commodity Data

	A	B	C	D	E	F	G	H	I
1	To Destination								
2	Sept - Aug 09/10								
3		AO	BW	CD	CG	MW	ZA	ZM	ZW
4	Containers	340014	3828	19910	1848	0	704	32104	2420
5	6 m	1442	36	45	2	0	6	799	8
6	12 m	7021	69	430	41	0	13	329	51
7									
8	Breakbulk	-947	1329	123	32	68	0	3875	6127
9									
10	Total Ton	339067	5157	20033	1880	68	704	35979	8547
11									
12									
13	From Destination								
14	Sept - Aug 09/10								
15		AO	BW	CD	CG	MW	ZA	ZM	ZW
16	Containers	0	220	132	0	726	2904	32212	22
17	6 m	0	2	6	0	33	42	1431	1
18	12 m	0	4	0	0	0	45	18	0
19									
20	Breakbulk	0	10	0	0	32	-3	46	0
21									
22	Total Ton	0	230	132	0	758	2902	32258	22

Figure F.1. Example of Commodity Data Provided by Johny Smith

The data includes the number of containers moved to and from each country as well as the tonnages. We cannot determine how much of a specific type of commodity was transported from this data. Both imports and exports are included in these figures.

We have commodity data like this for each full year (2010, 2011, and 2012) as well as the last four months of 2009.

	A	B	C	D	E	F	G	H	I
1	Cargo through the Port Of Walvis Bay to the following destinations.								
2	February 2010								
3									
4				DCTy					
5	Comm C	Comm Desc	Data	AO	BW	ZM	CD	ZW	ZA
6	1	AMMUNITION	Freight ton		110				
7			6 m Container		5				
8			12m Container		0				
9		BEER	Freight ton	462					
10			6 m Container	21					
11			12m Container	0					
12		BISCUITS/SWEETS/CHCOLATES	Freight ton	638					
13			6 m Container	7					
14			12m Container	11					
15		BOOKS	Freight ton	44					
16			6 m Container	2					
17			12m Container	0					
18		BUILDING MATERIALS	Freight ton	22		352			
19			6 m Container	1		4			
20			12m Container	0		6			
21		CERAMIC TILES	Freight ton	22					
22			6 m Container	1					
23			12m Container	0					
24		CHEMICALS	Freight ton			264			
25			6 m Container			12			
26			12m Container			0			
27		CLOTHING	Freight ton	88					
28			6 m Container	0					
29			12m Container	2					

Figure F.2. Example of Commodities Shipped Monthly to Southern African Countries

Two Spreadsheets were provided to us for each month of 2010-2012, the last four months of 2009 and the first two months of 2013. We compiled the export and import data separately and by commodity.

Appendix G: Data Used for Predicting Costs to Transporting Commodities to Different Locations

Country	Capital	KM	Price (NAM)/KM
CD	Lubumbashi	2478	\$30.67
ZM	Lusaka	2076	\$21.19
ZW	Harare	2300	\$25.00

Figure G.1. Countries and Destination Cities, Compared to Distance and Price per Kilometer

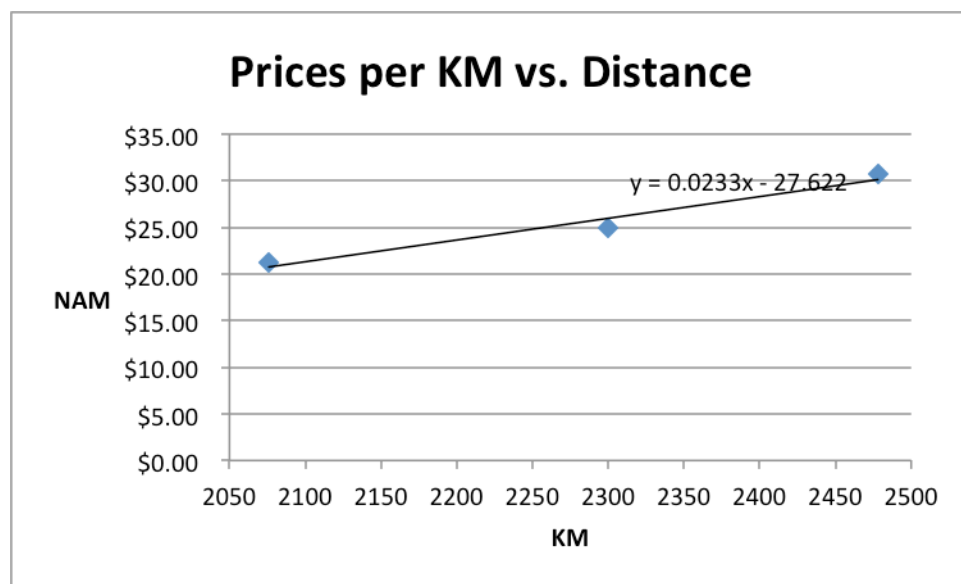


Figure G.2. Graph Used to Fit a Linear Relationship Between Prices Per Kilometer and Distance

Country	Capital	KM	Price (NAM)/ KM	Price 20' Dry	Price 20' Reefer	Price 40' Dry	Price 40' Reefer
AO	Lubango	1337	\$3.53	\$9,884.74	\$10,709.74	\$11,873.74	\$16,127.74
BW	Gaborone	1410	\$5.23	\$12,540.71	\$13,365.71	\$14,529.71	\$18,783.71
CD	Lubumbashi	2478	\$30.67	\$81,165.26	\$81,990.26	\$83,154.26	\$87,408.26
CG	Brazzaville	2691	\$35.08	\$99,560.71	\$100,385.71	\$101,549.71	\$105,803.71
KE	Nairobi	4231	\$70.96	\$305,398.03	\$306,223.03	\$307,387.03	\$311,641.03
MW	Lilongwe	2797	\$37.55	\$110,187.04	\$111,012.04	\$112,176.04	\$116,430.04
MZ	Maputo	2199	\$23.61	\$57,093.73	\$57,918.73	\$59,082.73	\$63,336.73
ZA	Johannesburg	1804	\$14.41	\$31,162.80	\$31,987.80	\$33,151.80	\$37,405.80
ZM	Lusaka	2076	\$21.19	\$49,155.44	\$49,980.44	\$51,144.44	\$55,398.44
ZW	Harare	2300	\$25.00	\$62,665.00	\$63,490.00	\$64,654.00	\$68,908.00

Figure G.3. Prices Predicted with the Linear Relationship Found between Price Per Kilometer and Distance

Appendix H: Additional Field Notes for Customs Interactions

Border Posts

To inspect the cargo in the delivery trucks, each checkpoint is equipped with a scanner. These scanners are set up in an independent building and are able to scan the entire truck at once. The process takes about 5 minutes and is much quicker than physically examining all of the contents of a shipment. The use of the scanner has eased the hectic process of inspection, however, when the scanner breaks down or undergoes maintenance, a physical inspections takes must take place which can take hours to complete depending on the cargo that is inspected. The scanner rarely breaks down thus physical inspections mostly take place during maintenance. The technicians are well trained in using the scanner as they receive 5 days of training to learn how to use the scanner and analyze the images. Technicians also receive refresher training later on and learn more on the job.

The customs officials mentioned that they have had problems with the smuggling of counterfeit goods in the trucks passing through. This previously required the physical inspection of all cargo; however this is no longer necessary since an x-ray scanner was installed. Since the scanner was installed, smuggling has decreased significantly and is no longer a problem at the border posts. Another problem that officials often encounter is that truck drivers are sometimes unaware that they must have bonds or cash in order to pass through the post, preventing them from transporting the shipment until someone brings the bonds to the post for them.

One major component in the international transportation of goods by road is the customs checkpoints at international borders. Customs officials said that they do not encounter congestion at the freight border posts, but there were some issues he had noticed. We found that there is no linked system for the exchange of clearance information with the Botswana side of the border post. Since trucks must pass through the Namibian side and the Botswana side of the border post, the same

information should be entered into their systems. However, the officials at the Namibian side can edit and view information for the post and can view information from other Namibian border posts. If the interface systems were linked, both posts would be able to check for discrepancies in the required documentation. The officials mentioned that a cloud computer system was in the works to link the Namibia and Botswana systems together and to help create a single post, however the computer systems in Botswana were not up to the same standard those on the Namibian side.

Lack of Manpower

The lack of manpower at customs checkpoints is also slowing down the process of transporting goods internationally. After speaking with a customs official at the Trans-Kalahari border post, we found that there are only 12 employees for clearance and 6 employees for enforcement. The official stated that this was not normal and not enough people to run the post. Since the post runs on three-hour shift operation, only 6 people would be able to work a shift, but at least 7 people are needed per shift. It was mentioned that they were searching for more employees. Finding these employees is not always an easy task because in order to be a customs official, a degree in finance or accounting along with courses on procedure and systems is needed. The candidate must also be willing to be sent to any border post in Namibia. Since there is a lack of manpower at these border posts, the process of transporting through the post takes longer than necessary. Truck drivers must wait for the officials to finish with the drivers ahead of them in the queue.

Appendix I: Additional Field Notes for Ocean-Based Shipping

Selection of Namport Executives and Motivation of Dockside Employees

Dockside employees are also causing delays in the movement of goods to other areas of the port and onto trucks. Many individuals working within the port are either unaware or unconcerned about their importance in the transport and logistics sector (Mupupa, 2013). Employees at the port may not realize that any small delays in completing duties, such as extra breaks or beginning work late and ending early, can result in much larger delays in the entire supply chain.

Another shortcoming at the port is the manner in which its executives are chosen. As previously mentioned in Section 4.3.1, each of the higher levels of Namport is appointed by the level directly above it, and each of these appointments lasts for five years. Many industry members believe one must have at least two years of experience in transport and logistics to understand the sector, and when individuals with minimal experience are sometimes appointed; this leaves only a three-year period where true progress can be made. Many believe that this is the main reason why expansion at the port has not occurred in the last eight years that it has been discussed.

Namibian Stevedoring Services

NSS, as one of three stevedoring companies in Walvis Bay, provides loading and unloading services for varying types of containerized and break-bulk goods. They mainly operate onboard the ocean liners that enter the port, using equipment they have purchased and been licensed to operate within the port.

NSS employs approximately 150 individuals as operations managers, truck drivers, forklift and crane operators, and stevedores, who are organized into teams of twenty and supervised by team leaders, who are supervised by foremen. To become a successful stevedore, one must be a sturdy, hardworking, independent-thinking and committed individual – which can be difficult to find. NSS has a

three-month probationary period for its new stevedores to ensure that they are fit for the tough conditions of the job. Stevedores receive on-the-job training to deal with varying types of goods and it can take at least five years to become a well-rounded stevedore, even then, new and specialized types of cargos are shipped to and from the port frequently. With this on-the-job training comes the experience to know when conditions at the port cause the transfer of cargo to be too dangerous (too wet or windy) and they reserve the right to refuse to transfer the goods.

Lack of Veterinarians

An additional bottleneck that takes place at the port is caused by the need for veterinarians to inspect shipments that contain meat commodities. Since there are only two veterinarians in Namibia that are qualified to inspect the cargo, truck drivers delivering meat commodities have to wait for the veterinarians to make time to check their meat products. This is also a problem when ships arrive early or later than they are scheduled and the veterinarians cannot be present.

Appendix J: Additional Field Notes for the Trucking Industry

Trucking Companies

The trucking industry is crucial for the transportation of goods through Namibia domestically and from the Port of Walvis Bay to other countries in the southern African region. After talking to several transporter and freight forwarding companies, we found that most goods are transported to Zambia, DRC, Zimbabwe, Botswana and South Africa. These companies had well-established systems that made these deliveries as efficient as possible.

Truck Drivers

Truck drivers come across a few other problems when making deliveries within southern Africa. One complication that often occurs is the truck breaking down. When this happens, the driver must get the vehicle fixed at a nearby garage, small companies will have someone from the company travel to fix it. Some transport companies have arrangements set up with certain garages along the corridors to fix the trucks at reduced rates. These arrangements are normally set up with Namibian garages since they are trustworthy and there is no need to cross any international borders to work with them.

Sickness

Another problem truck drivers encounter during delivery are complications with the health of the driver. Food poisoning is often encountered in other countries, as food might not be prepared as well. Drivers also get sick from drinking the water in other countries since the water purification is subpar. To avoid this problem, drivers bring their own food and water so they are not forced to consume what is offered across the border. If the driver does not have enough food or water for the trip, they must risk having foreign food and water since there are no truck stops to provide these things for them. Malaria is also a problem for truck drivers, who are less likely to have malaria medication to take as they

travel through malarial zones. Other diseases that truck drivers face include diabetes and high blood pressure. While some of these diseases won't prohibit the driver from making deliveries entirely, they can make him unable to drive for a few days or unable to drive safely. This poses as a challenge when making a delivery since many truck drivers will not call in sick because most are paid on commission for each delivery, or by the kilometer they drive. If a driver becomes too sick to drive during a delivery, a replacement is sent to the drivers' position to take over the delivery and the driver is returned home.

Theft of Cargo

Another minor bottleneck is caused by the theft of cargo during delivery. Although this does not happen often, robberies occur where the cargo is stolen and the delivery cannot be completed. These robberies tend to happen at night when the driver is pulled over and defenseless while sleeping in his truck.

Differences in Weighbridges

The difference between Namibian weighbridges and Botswana and Angola weighbridges can cause a bottleneck and slow down delivery by road. It was mentioned that when trucks went over Namibian weighbridges, they would be the proper weight. When the same trucks went over the bridges in Botswana or Angola, they would suddenly weigh more and would be unable to proceed with the delivery until they either rearranged the cargo or got dumped the extra cargo. This prevents delivery until someone from the trucking company comes to pick up the cargo that is being left behind or the drivers rearrange their cargo.